IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

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| HITACHI CONSUMER ELECTRONICS | * | Civil Docket No. |
| | * | 2:10-CV-260 |
| VS. | * | Marshall, Texas |
| | * | |
| | * | April 11, 2013 |
| TOP VICTORY ELECTRONICS | * | 8:30 A.M. |

TRANSCRIPT OF JURY TRIAL
BEFORE THE HONORABLE JUDGE RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE

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P R O C E E D I N G S

(Jury out.)

COURT SECURITY OFFICER: All rise.

THE COURT: Be seated, please.

All right. At this time, I'll ask the Plaintiffs to go to the podium and read into the evidence the preadmitted exhibit numbers that were used

before the jury as part of yesterday's evidence.

MS. GAGLIARDI: Good morning, Your Honor.

THE COURT: Good morning.

MS. GAGLIARDI: Plaintiffs submit the following evidence: PTX 97, 201, 202, 404, 522, 523, 1268, and 1385.

THE COURT: Is there objection from the Defendants to those exhibit numbers?

MR. DACUS: No, Your Honor.

THE COURT: All right. They'll be considered part of the record, and I'll hear the same from the Defendants.

MR. WINTER: Good morning, Your Honor. Vision Winter for the TPV Defendants.

Defendants would like to move in DTX 805, 807, and 808.

THE COURT: All right. Are there objections from the Plaintiff?

MS. GAGLIARDI: No, Your Honor.

THE COURT: Those will be considered part of the record of the case.

Thank you, Counsel.

Anything further, Counsel, before we bring in the jury and call the next witness?

MR. DACUS: Only to alert the Court, Your

Honor, that I believe both parties expect that we'll finish the evidence tomorrow morning, and for logistics, I wanted to alert the Court to that and what the Court's expectation is with respect to a charge conference and closing.

THE COURT: Well, I have reviewed the submission from both parties as to the proposed charge and verdict form. My practice is to do it in a two-step process. Some of you may be familiar with this. Some of you may not.

But my intentions are to hold an informal charge conference in chambers and have an informal discussion with counsel for both sides as to their submission, any proposed changes I might have, and give the Court a sense of what are your most critical points, what are your less critical points in the charge.

Afterward, having taken into consideration the input from both sides on all the issues, then the Court will consider and generate a second draft submitted to the parties and hold a formal charge conference at which, on the record, counsel may object and urge their objections as to any portion of the charge which the Court will either sustain or overrule and the result of that process will be the charge submitted to the jury.

It's my intention, assuming we can make the time work, to charge the jury and allow them to retire to begin deliberations before the end of this week. If they are back Monday continuing to deliberate, that's fine.

If they're able to do it early enough to where they can reach a verdict Friday evening, that's fine, too. If they want to stay late Friday evening, I'll accommodate them to the extent our resources and staff will allow me. We'll cross that bridge when we get to it.

But if you-all can finish the evidence, including the rebuttal and be ready for closing arguments and the charge to the jury tomorrow morning, then I would hope we can do that in the afternoon and get the case to the jury before we go home Friday, all right?

MR. DACUS: So that I'm clear, Your Honor, any informal charge conference, the expectation would be to hold that early afternoon tomorrow?

THE COURT: We may hold that late today.

MR. DACUS: Fair.

THE COURT: We'll just see.

MR. DACUS: Yes, sir. Thank you.

THE COURT: All right. If there's not

anything further, then, Mr. Shadden, if you'd bring in the jury, please.

COURT SECURITY OFFICER: All rise for the jury.

(Jury in.)

THE COURT: Good morning, Ladies and Gentlemen. Have a seat, please.

All right. Defendant may call their next witness.

MR. LANDIS: Your Honor, Defendants will call Scott Lery.

Mr. Lery was subject to the Rule, so he is outside the courtroom, and he has not been sworn.

THE COURT: All right.

(Witness enters the courtroom.)

THE COURT: Mr. Lery, if you'll come forward, our courtroom deputy seated in front of me will administer the oath to you.

Sir, if you'll come around here.

(Witness sworn.)

THE COURT: Now if you'll come around and have a seat.

All right. Mr. Landis, you may proceed.

MR. LANDIS: Thank you, Your Honor.

SCOTT ALLEN LERY, DEFENDANTS' WITNESS, SWORN

DIRECT EXAMINATION

BY MR. LANDIS:

Q. Good morning, Mr. Lery.

A. Good morning.

Q. Could you please state your full name for the record.

A. Scott Allen Lery.

Q. Mr. Lery, could you tell the jury a little bit about yourself?

A. Yes. I live in Northern California. I'm married to a beautiful woman, Carrie, for 11 years, 12 years now. We have five children, mostly young adult children, but they're always going to be children to us.

And I have a -- educationally, I have a bachelor's degree of science in electrical engineering in computer science from the University of California Berkeley.

I also have a master's degree from University of California San Diego, and that is in communication systems and theory.

Q. Now, Mr. Lery, do you currently work as an engineer?

A. Yes, I do. I have my own engineering consulting business.

Q. Mr. Lery, have you ever testified in court

before?

A. I have not. It's my first time.

Q. Well, we'll try to make it easy for you.

A. Thank you.

Q. Mr. Lery, we asked you here today to talk to you a little bit about some of your work history and particularly your work history at one company called General Instrument.

Can you tell the jury when you started at General Instrument?

A. I started in late June of 1990.

Q. And when you started at General Instrument, what were you asked to do by the company?

A. I was asked to design and help build an HDTV system for over-the-air broadcast television.

Q. Did that system have a name, sir?

A. Yes. We called it DigiCipher.

Q. When you arrived at General Instrument, how did you go about designing the system?

A. Well, first, I was handed a -- what I call a system document that gave a -- a description of -- of the system that we were to -- to build and -- and further design, and I had to do some research in that for what was out there in the academic community, things like that.

Q. I believe you were handed, when you took your seat there, what's been marked as Defendants' Exhibit 599. Do you have that, sir?

A. Let's see. Yes. This is it. Okay.

Q. Do you recognize this document?

A. Okay. Take a quick look here.

Oh, yeah, yeah. Yes, I do.

Q. How do you recognize this document?

A. This document was given to me a day or two after I arrived at GI by my supervisor at that time.

Q. Now, you've had your deposition taken in this case; is that true, sir?

A. Yes.

Q. And during that deposition, I believe you were asked about another document that had a different date on it. Do you recall that?

A. Yes, I do.

Q. As you sit here today, are you reasonably certain that the document you have as Defendants' Exhibit 599 is the -- the document that you were given when you arrived at General Instrument?

A. Yes, I do. I am.

Q. Now, I believe you testified earlier that you called this a system document. Can you explain to the jury why you call it a system?

A. Well, it's kind of like analogous to an architectural land. It doesn't have all the -- necessarily all the nuts and bolts and where things go, you know, down to the last detail, but it -- but it does give an overall, you know, 3,000-foot view of how the blocks of the system, important blocks, functional blocks, are put together.

Q. Now, during -- or when you arrived at General Instrument and you were given this document, did you become aware at any time that the document was to be maintained in confidence?

A. No.

Q. Did you become aware at any time that the information contained in the document was to be maintained in confidence?

A. No. No, sir.

Q. Now, during your time at General Instrument, did you learn about General Instrument's practice for when they did want to maintain a document in confidence?

A. Yeah. They were -- like most companies, if you had something that was kept -- kept for the company eyes only, so to speak, you were told that, you know, these doc -- the documents on a particular project, they were to be kept, you know, a lot of times just in your office.

But more so, they were also stamped, all the pages were stamped sometimes to where you couldn't even read the print, but, you know, they were stamped General Instrument proprietary or something to that nature.

Q. Does the document you have before you as Defendants' Exhibit 599, is that one stamped General Instrument proprietary or have any other confidential label?

A. Certainly not that I can see and I don't ever remember there being one.

Q. Now, to your knowledge, did General Instrument ever publicize the DigiCipher system?

A. Sure did. They're very proud of it. And everybody was jumping for joy when I got there.

Q. During your time at General Instrument, did you ever see any press releases about the DigiCipher system?

A. Yes, I did. I might say that I was given the press release Xeroxed from a newspaper probably about the same time I got this document.

Q. Once you received the document, what did you do with it?

A. Well, you know, these are my plans, and so I needed to study them and figure out, you know, how I was going to really build -- help design and build this

system, help build it.

And so I just sat down at my desk and studied it and tried to get a few more other resources brought in. I also talked to some other people, you know, around General Instrument about it, you know, things of that nature.

Q. Did you work alone on this project?

A. No, not at all.

Q. Who else did you work with?

A. I worked very closely with a person by the name of Chris Heegard.

Q. Was Mr. Heegard an employee of General Instrument?

A. No. He was a consultant.

Q. Did Mr. Heegard have access to the system information that was contained in Defendants' Exhibit 599?

A. Yes, very much so. I mean, I needed the help, and this document was -- oh, let me back up a little bit.

Chris Heegard was my office mate, and so we worked very close together. And this document was at least discussed quite a bit, and we had this thing out all the time in the office laying around and talked about it a lot.

Q. Now, after analyzing the system contained in Defendants' 599, what did you and Mr. Heegard conclude?

A. We concluded that the system in this document would not meet the coverage requirements that existed under the then current analog television broadcast system. It wouldn't reach the same number of people.

Q. And what did you do about that?

A. Well, we had to do some design, and -- and we came up with a different better system that would meet those -- the requirements I mentioned, and we were actually trying to achieve much better than that.

Q. Was that new system ever built and demonstrated?

A. Yes. It was demonstrated in April of 1992.

Q. Thank you, Mr. Lery.

MR. LANDIS: That's all the questions I have.

THE WITNESS: Thank you.

THE COURT: Cross-examination?

CROSS-EXAMINATION

BY MR. BLACK:

Q. Just one quick question, Mr. Lery.

You testified at deposition about three weeks ago, correct?

A. Correct, sir.

Q. And at that time, you said that you did not know when the error correction system that's described in that document was publicly known, right?

A. I don't recall saying that, sir. Could you refresh my memory?

Q. Sure.

QUESTION: Do you know when the DigiCipher error correction system that's described in that June 8th paper became publicly known?

The witness: I do not.

Do you recall that?

A. Actually, I do not recall that, but give me a moment.

Q. We can put it up on the screen.

A. Oh.

Q. Right here at the bottom: Do you know when the DigiCipher error correction system that's described in that June 8th paper became publicly known?

I do not.

Do you see that?

A. I do.

Q. Thank you.

MR. BLACK: That's all the questions I have, Your Honor.

THE COURT: Redirect?

MR. LANDIS: Thank you, Your Honor.

REDIRECT EXAMINATION

BY MR. LANDIS:

Q. Mr. Lery, with respect to the question you were just asked, is it -- is it true that you just don't know the exact date as to when it became publicly known?

A. Well, would -- I guess I'm not sure about what publicly known means. It was certainly in this document. This document was known by certainly the government agency that this was submitted to -- public agency it was submitted to.

I -- I -- I honestly can say that, you know, it was in this document. I don't know when this document was given to the public, so to speak. I mean, I just know that it was readily available to anybody at GI, and the government agency had a copy of it. And as far as the -- the -- a detail like that, the error correction system, I can only, you know, speculate.

I don't really know exactly when people knew about -- it would be more -- the question would be about how many people knew about this document.

Q. Sir, let me ask you just one more question.

A. Okay.

Q. Mr. Heegard knew about that document?

A. Oh, yes.

Q. He knew about the error correction system, correct?

A. Oh, very much so. That's his specialty.

Q. Thank you.

MR. LANDIS: No more questions, Your Honor.

THE COURT: Additional cross?

MR. BLACK: Just a little bit, Your Honor.

RECROSS-EXAMINATION

BY MR. BLACK:

Q. You said Mr. Heegard was working in the office next to you?

A. No. He was my office mate. He was 4 feet away.

Q. He was in the office with you. Was that in General Instrument in San Diego?

A. Correct, sir.

Q. And that facility in San Diego, that was notorious for its high level of secrecy, wasn't it?

A. Not to my knowledge.

Q. General Instrument certainly didn't want its confidential system that were under design, the work you were doing, to be provided to just anybody, right?

A. Not initially.

Q. At the time that the work was being done, it was confidential, wasn't it, sir?

A. At what -- what work was being done, sir?

Q. Your work that you were doing at General Instrument in system design was not the kind of information that you would be able to provide to a third party, right?

A. After a couple weeks, when we decided to change the system, so to speak, then that work became confidential.

MR. BLACK: Thank you, Your Honor. I have no further questions.

THE COURT: Additional direct, Mr. Landis?

MR. LANDIS: No more questions, Your Honor.

THE COURT: All right. You may step down, Mr. Lery.

THE WITNESS: Thank you.

THE COURT: Defendants, call your next witness.

MR. BLACK: Your Honor, Defendants call Dr. Cliff Reader.

THE COURT: Has Dr. Reader been sworn?

MR. LANDIS: Yes, sir.

THE COURT: Please have a seat, sir.

MR. LANDIS: May I proceed, Your Honor?

THE COURT: You may.

CLIFFORD READER, DEFENDANTS' WITNESS, PREVIOUSLY SWORN

DIRECT EXAMINATION

BY MR. LANDIS:

Q. Good morning, Dr. Reader. How are you?

A. Good morning. Thank you.

Q. Could you please state your full name for the record.

A. Clifford Reader.

Q. Is it okay if I call you Dr. Reader?

A. Please do.

Q. Dr. Reader, why are you here today?

A. I'm here to give my opinions as an expert regarding a TPV -- whether TPV infringes the '243 patent.

Q. Now, Dr. Reader, is being an expert witness the only thing you do?

A. No. I do a variety of work. I -- I work in business development and marketing and product planning, and I also do purely technical work.

Q. And, Dr. Reader, when you do that other work, other than being an expert witness, do you get paid for it?

A. Yes, I do.

Q. Do you get paid for your work here today?

A. Yes, I am.

Q. How much are you being paid?

A. My rate is $400 an hour.

Q. Now, Dr. Reader, have you formed any opinions as to whether TPV infringes Claims 4 and 5 of the '243 patent?

A. Yes, I have.

Q. What are those opinions?

A. In my opinion, based on my analysis, TPV does not infringe Claims 4 and 5 of the '243 patent.

Q. In forming those opinions, have you considered who would be a person of ordinary skill in the art with respect to the '243 patent?

A. Yes, I have.

Q. Who would that be, in your opinion?

A. So a person of ordinary skill in the art in this case would be someone who has a bachelor's degree in electrical engineering or computer science, and someone who has three years of experience in the design and implementation of real-time video display systems.

Q. Now, before we get down to your opinions and the bases of these, I think the jury members would like to know a little bit about you.

Can you tell them how old you are?

A. I'm 63.

Q. Are you married?

A. I have a lovely wife, who is a native of Southern California, and we're going to celebrate our 25th wedding anniversary this year.

Q. Congratulations.

A. Thank you.

Q. Now, based on your accent, I think the jury members can tell you're not from Marshall, Texas. So where are you from?

A. So I grew up in England just outside of London.

Q. And do you live in England right now?

A. No. I -- I've lived here in the States for 40 years now. I've been a citizen for 30 years.

Q. Did you get your education in England?

A. Well, I did my undergraduate degree at the University of Liverpool in England, and then I went on to do my Ph.D. at the University of Sussex in England.

Q. What brought you to the United States?

A. Well, I started doing my research work at the University in Sussex, and I quickly learned that all of the leading effort in my field was here in the United States, and in particular, there was an image-processing

institute at the University of Southern California.

And so, in fact, I -- I went to USC in Los Angeles, and I did all of the research work for my Ph.D., you know, in -- in L.A.

Q. Now, I know it takes a lot to get a Ph.D. What did you have to do?

A. Well, the requirement to get the Ph.D. was to perform original research and then to document that in a thesis, and the thesis, in practice, comprised a book that was over a hundred pages long.

Q. Did -- did you have to write such a book?

A. Yes, I did.

Q. Did the book have a title?

A. Yes. It was called Orthogonal Transform Coding of Still and Moving Pictures.

Q. That sounds pretty technical to me.

Would the members of the jury still be using what's in that book today?

A. Well, we -- we were doing a lot of fundamental research work in that timeframe, and some of the work that I did forms the basis for the digital video we use today. So if you play a DVD movie or if you watch a broadcast television program in our digital television today, then some of the work that I did lies underneath that digital video that you're enjoying.

Q. Now, what did you do after you graduated from USC?

A. Well, I was offered a job in -- in the United States and I started work for Ford Aerospace in Palo Alto, working in the image-reconnaissance area. And for some years, I worked in -- in military imaging. And then later on, in the 1980s, digital imaging began to be used in other scientific applications, like medical imaging, for example.

Q. After your work in the aerospace and medical-imaging industry, what did you do next?

A. Well, around the -- around the end of the 1980s, there was really a fundamental change in my field, because semiconductor technology reached the point at which it became possible to use digital video techniques in such a small number of chips that you could build consumer products at a reasonable price.

And so the whole field really underwent a change, and I started working in the semiconductor industry designing chips to do digital video for consumer applications.

Q. During this time, did you have a chance to participate in any international groups pertaining to your field?

A. Yes. Taking -- I mean, taking advantage of

this, you know, new available technology, there was a standardization effort begun called MPEG, and I joined MPEG in support of the work that I was doing to design chips.

Q. And can you tell the members of the jury what MPEG stands for?

A. Yes. It stands for moving pictures experts group.

Q. Who are the types of people or organizations that would join a group such as MPEG?

A. Well, MPEG was an international standardization effort, and so the -- the delegates to MPEG were typically research scientists who came from corporate research labs and people who came from universities.

Q. Did you ever have a leadership role in -- in MPEG?

A. Yes. I was asked to actually be the leader of the United States delegation to MPEG. We were -- we were a very large delegation. The United States had about two-thirds of the delegates in MPEG, and I was the leader of that U.S. delegation, representing U.S. interests in this forum.

Q. So would it be fair to say that all the companies and people that were part of MPEG, they

trust -- entrusted you to represent them before the international community?

A. Yes. That's right.

Q. Now, we've heard a lot about another organization called the ATSC.

Did you have any involvement with the ATSC?

A. Well, the ATSC, in the late 1980s, was kind of a parallel activity compared to what was going on in MPEG. So the ATSC was an activity established by the U.S. Government with a goal to provide the U.S. with a new national high-definition television system.

Now, in the late 1980s, everybody in that activity was focused on analog television technique. So they really were trying to extend the old NTSC analog system to high definition. And that was different from what we were doing in MPEG, which was to focus on digital television work, but that changed very radically when General Instrument made its proposal to the ATSC for an all-digital, high-definition television system.

And indeed, you know, the other parties who were proposing high-definition systems, most of them migrated towards doing digital solution too. So what happened is, you know, I -- as the head of the U.S. delegation to MPEG, I -- I proposed that these two activities should actually converge and that it would

make sense if we took the two activities and they -- they came together.

And indeed, that's what ended up happening, because in the -- in the event the ATSC group adopted the emerging MPEG standard and worked with us. And so the MPEG 2 standard forms the basis of the ATV -- ATSC television system we use today.

Q. Now, Dr. Reader, during your career, have you ever had a chance to work on what the jury's heard about a little device called a system-on-a-chip?

A. So in 1990, I told you I went to work in the semiconductor industry, and I started working for a company called Cipher Semiconductor, designing a chip that could implement these new MPEG standards.

Now, this -- this kind of device that I was doing then was really a forerunner of system-on-a-chip we see on today, because system-on-a-chip means integrating what used to be multiple chips or multiple components, integrating all of those together. And that was something that I and my competitors started doing around that timeframe.

Q. Now, have you continued to work in the video processing field today?

A. Yes. I've continued the work -- throughout the '90s, I was working in the semiconductor field, as I

said. At the end of the -- at the end of that decade, I was working for a company that made de-interlacer chips that were sold to television manufacturers and the manufacturers of DVDs. So progressive televisions or progressive DVD players were the market that we were addressing back then.

Q. Dr. Reader, based on your work experience and education, would you consider yourself as one of skilled in the art in the area of digital video signal processing as it relates to televisions?

A. Yes, I do.

Q. All right. Let's get back to your opinions. I believe you said earlier you were here to talk about the -- the '243 patent; is that correct?

A. That's correct.

MR. LANDIS: Can we put up Plaintiffs' 4, please?

Q. (By Mr. Landis) Do you recognize Plaintiffs' Exhibit No. 4?

A. Yes.

Q. What is that, sir?

A. So this is the face page of what we're calling the '243 patent.

Q. Have you had a chance to review the '243 patent in detail?

A. Yes, I have.

Q. Can you tell the jury generally what the '243 patent is about?

A. Well, we can see the title of this patent is Digital Broadcast Receiver Unit, and the digital broadcast receiver unit, according to the '243 patent, includes multiple video processing sections, and each of those processes the incoming video signal, according to a specific video signal format.

Q. Now, what did you do to form your opinions in this case?

A. So I read the patent and studied it very carefully. I read the file history at the Patent Office that's related to this patent. And then I looked at the technical documentation for the accused products. And I read those documents carefully, and I compared those to what is claimed in the '243 patent claims.

Q. Now, Dr. Reader, this case has been about TVs. Did you examine the TVs?

A. Not physically, no.

Q. Why not?

A. Well, because, you know, the -- the technology that we're talking about here, all the capability that we're talking about here is actually embedded in the system-on-a-chip that's inside the TV.

So the thing we need to focus on is that system-on-a-chip.

Q. Now, Dr. Reader, I'm holding up before the jury, which is Defendants' physical Exhibit 17.

Is this the system-on-a-chip that you're talking about?

A. That's an example of one, yes.

Q. Did you examine all of the system-on-a-chips in this case?

A. I examined the system-on-a-chips from the various chip manufacturers that provide those SOCs inside the TPV TVs.

Q. Did you examine the physical chips themselves?

A. Well, I -- I -- I didn't literally look at, you know, the physical device, because, you know, all you can see there is it's a piece of plastic with some metal pins coming out of it, so I -- I didn't do that. No.

Q. So can you tell the jury specifically what the documentation you looked at was?

A. Well, the chip manufacturers provide documents called datasheets, and the datasheets are a description of how the chips actually work, and that's what I looked at.

Q. We're going to look at some of those

datasheets later, Dr. Reader.

Now, Dr. Reader, can you tell the -- the -- the jury what claims are being asserted against TPV?

A. Claims 4 and 5 are being asserted.

MR. LANDIS: And if we go to Column 7 of Plaintiffs' Exhibit 1, can we blow up the lower part of Column 7, please?

Q. (By Mr. Landis) The bottom, is that Claims 4 and 5, sir?

A. That's correct.

Q. What kind of claims are Claims 4 and 5?

A. Claims 4 and 5 are called dependent claims.

Q. Why are they called dependent claims?

A. Because these claims depend from an independent claim, in this case, Claim 1.

Q. Now, when I look at Claim 5, it says a unit as claimed in Claim 4. What does that mean?

A. Well, it means that the limitation in Claim 4 is dependent on -- I'm sorry -- I'm sorry. Let me start again.

The -- the limitation that you see expressed in Claim 5 is dependent upon Claim 4, and then Claim 4, in turn, has a limitation and the claim is dependent on Claim 1.

So we must take all of the limitations of

Claim 1 in addition to the limitations in Claim 4 and Claim 5 in order to interpret and understand Claim 5.

MR. LANDIS: Your Honor, may I have a moment to set up an exhibit?

THE COURT: You may.

Q. (By Mr. Landis) Now, Dr. Reader, I just put on the easel here I think what we're looking at in Column 1.

Is this the claims that you analyzed in this casing?

A. Yes, I did.

Q. I'd like to talk to you a little bit about -- well, before I get there, do you have an opinion as to whether or not the TPV products accused of infringement in this case -- in this case infringe Claim 4 of the '243 patent?

A. Yes, I do.

Q. What is your opinion?

A. The -- based on my analysis, the TPV TVs do not infringe Claim 4.

Q. Why do you hold that opinion?

A. Because they do not infringe Claim 1.

Q. And is there a specific element in Claim 1 which you believe is not met by the products?

A. Yes. The -- the TPV systems -- the TPV TVs do

not have the plurality of video processor sections, which is a part of the third limitation of Claim 1.

Q. Now, with respect to Claim 5, do you have an opinion as to whether the TPV products infringe Claim 5 of the '243 patent?

A. Yes, I do.

Q. What is that opinion?

A. The TPV TVs do not infringe Claim 5 of the '243 patent.

Q. And why do you hold that opinion, sir?

A. Because, again, they don't infringe all of the limitations of claim -- they do not infringe Claim 1, and, again, because they do not have the plurality of video processor sections required by the third limitation of Claim 1.

Q. Now, before we get in some details about your opinions, I thought it might be helpful if we tried to explain some of this claim language to the jury. I understand you prepared a little slide show for them; is that true?

A. Yes, I have.

Q. Now, just to remind us again, what is being claimed in Claim 1 of the '243 patent?

A. So as -- as you can see from the language of the claim, it begins by talking about a digital

broadcast receiver unit. And in the preamble, we can see that it's going to receive a digital multiplexed signal stream, and this digital multiplexed signal stream has got multi -- multiplexed signals in it that have been commonly encoded by the same encoding/decoding standard, and that those multiplexed signals include video signals which correspond to a plurality of different video signal formats.

Q. Now, will your slide show help us understand what that means?

A. What I'm going to show first is how in a complete broadcast system, from the television station to your home, this digital multiplexed signal stream is actually created, and then I'm going to show you how the '243 patent describes the receiver operating to receive that signal.

So I'm going to begin, as I said, on the broadcast side. And first, we're going to start at the TV station, and I've chosen to illustrate this using one of the local stations that you have here in Marshall, Texas. So this is the building that Channel 12, the CBS channel comes from.

And if we go to the next slide, please.

Then here's the channel lineup for Marshall for the over-the-air broadcasting, and Channel 12 is

highlighted in yellow. That's the CBS channel. And today, with digital broadcasting, there are three different programs that are broadcasted on this channel.

Now, years ago, before we went to digital TV, there would have been one analog CBS program on this channel, Channel 12. Today, there's three channels there using digital television. And the first one is the main CBS programming, Channel 12-1; that's a high-definition television program.

And in addition, there's two more standard-definition programs, all contained on the same channel called This TV and Bounce TV.

And what I'm going to show you now is how the broadcaster actually packs those three channels onto what used to be one original channel. You can see them at the top of the page here. I've color-coded them for the blue high-def main CBS program, and the other two programs I've shown in green and red.

And I'm going to use the analogy of a train of boxcars to illustrate how this actually happens. So here's the train, and in the real ATSC system, that actually represents the MPEG 2 transport stream. And that was defined by the MPEG standard that I told you became a part of the ATSC Standard.

So what we actually do to broadcast this

signal is break up each program into fragments. And so what I'm going to show you in my analogy is I'm going to start loading the boxcars of the train with fragments of each of the programs in turn.

So first, I'm going to load a piece of the high-definition program into the train, and then I'm going to move the train forward, and I'm going to load another piece of program. And you can see I'm loading some high-definition again, and you'll see that I will load more high-definition boxcars than the other boxcars, because there's more information in the high-definition signal. So it will take up more of the train.

And then I'm just going to continue this process. So we'll load the cars with the fragments of these programs. So we have managed to put all three programs onto the same train; in other words, the same MPEG transport stream by breaking them up and sequentially sending them over the air.

Q. Now, Dr. Reader, before we move onto the '243, is what you just created the multiplexed signal stream in Claim 1?

A. That's right.

Q. So now we're going to bring the train to the receiver?

A. So now what we're going to do is show you what happens when you receive this kind of broadcast television signal with digital television. So here comes the train, and you can see at the top of the slide here that this is an example of how the '243 patent says that we should perform this sequence of operations. So what I'm illustrating is that.

Q. And just to be clear for the jury, before we move on, you're not saying that this is how the TPV TVs work; is that correct?

A. That's right. I'm showing you how the patent says this is supposed to happen.

Q. Okay. If you could continue on for us.

A. Yes. And if you could please help me by pointing to --

Q. Sure.

A. -- the claim limitations, because what I'm going to do is step through Claim 1 and show you how the patent describes this sequence of operations.

So the -- the first thing that the -- the -- the patent says we should do is, we should isolate one video signal from the received digital multiplexed signal.

So I'm going to use as an example one of the low-definition or standard-definition channels --

THE WITNESS: Next slide, please.

A. -- so I'm going to show you what happens if we tune to this TV.

Now, that's the green boxcars, and for the first limitation of the claim, we're going to isolate the signal for this TV. And I'm going to -- in my analogy, I show you unloading the boxcar. It goes down into this Box No. 5 in the diagram.

And then the next limitation of the claim says a decoder to decode this video signal. So let me move the green information over to the MPEG decoder in Box No. 11, and you see that happening on this slide here.

And what we're looking at is -- is Figure 1 from the '243 patent.

Well, then in the next limitation of the claim, we need a plurality of video processor sections.

And in this Figure 1 of the patent, the example is given in which there are three boxes there called 141, 142, and 143.

And those are the video processor sections. And there's -- there's -- there's a plurality of them or there's multiple of them, in this example there are three.

So now what I'm going to do is, I'm going to bring my green piece of information down to one of those

video processor sections. And the claim limitation says that each of those video processor sections provides video processing according to a different video signal format, okay?

Q. (By Mr. Landis) Now, just to remind the jury, has the Court construed the term video signal format?

A. Yes, it has.

Q. How -- what's the construction that the Court has used?

A. So video signal format has been construed by the Court to be the number of lines and whether the lines are progressive or interlaced.

Q. So using that Court -- using the Court's construction, what does this claim language mean to you?

A. Well, it tells me that -- that each of the video processor sections is going to process the signal according to the number of lines and whether the lines are interlaced or progressive.

Q. And is that what's being shown in Figure -- your illustration of Figure 1?

A. That's right. So in this example, we see that this box 141, which is one of the video processor sections, is going to process according to the number of lines and whether it's interlaced or not, and in this example, the number of lines is 480, and it's an

interlaced signal, which is shown with the little letter i.

Q. Now, do you have a -- does this train continue on, sir?

A. Right.

So if we continue to watch this program, we'll -- you know, we'll unload another green boxcar, and we'll process the signal the same way.

Now, let me show you another example just to make it clear how this system works.

What I'm going to show you now is what would happen if we tune to the main high-definition CBS program, which is going to be our boxcars colored in blue.

So the same process happens. We're going to unload the boxcar into the -- using the isolator, decode it with the MPEG decoder, and then we're going to need to process this according to the number of lines and whether the signal is interlaced or progressive -- whether the lines are interlaced or progressive.

So now you can see that the video processor section that's going to do this is the box labeled 143. It's going to process according to whether the number -- I'm sorry -- the number of lines and whether it's interlaced.

And in my example here, the number of lines is 1,080, which we call 1080, and there's a little i there that shows you this is going to be interlaced.

Q. And so is 143 processing according to the 1080 lines and the interlaced?

A. That's right.

Q. And I'm assuming, if we went further, the train would just unload all of the rest of those; is that right?

A. If we continue -- the train, remember, is the MPEG 2 transport stream, and as that stream comes through the digital broadcast receiver unit, we perform that operation on all of the blue boxcars to watch this program.

Q. And -- and, again, to be clear, is it your opinion that the TPV TVs do not operate in this manner?

A. The TPV TVs do not operate this way.

Q. All right. Dr. Reader, thank you for that.

I'd like to now turn our attention back to Claim 1, and in particular to this section that you've -- you've highlighted as being important to your opinions, the plurality of video processor sections.

And I think that it would be helpful to the jury if we just kind of broke down the claim language for them.

So the first thing we see in the claim language is a plurality of video processor sections.

What does that mean?

A. That means that there are two or more video processor sections.

Q. And the next thing we see is with respective video processor sections.

Do you see that?

A. Yes.

Q. What does that mean?

A. So each one of the video processor sections is going to do something.

Q. And what is each one of the video processor sections going to do?

A. They're going to do video processing according to a different video signal format.

Q. And, again, video signal format has been construed by the Court to be the number of lines and whether the lines are progressive or -- or interlaced, correct?

A. That's correct.

Q. Now, you were in the courtroom during Dr. Myler's presentation; is that true?

A. Yes, I was.

Q. And do you remember that Dr. Myler discussed a

lot about his opinions being based upon receipt of an ATSC signal?

A. Yes.

Q. Can you tell me, in -- in the practical world, in practice, what are the formats of the signals that are broadcast under ATSC?

A. So in -- in the U.S. today for over-the-air broadcasting, there are three formats that are used. We saw two of them in my example, and there's also a third. So there are -- in total, there's the format called 480i, there's another format called 720p, and then there's 1080i.

Q. Now, does the ATSC standard contemplate other formats?

A. Yes, it does, but in the U.S., we only use the three that I just described.

Q. How many formats does the ATSC contemplate?

A. In total, they -- they have 18 different formats.

Q. Now, Dr. Reader, in your opinion, is there any component of the SOCs in the TPV TVs that processes a signal according to both the number of lines and whether the lines are progressive or interlaced?

A. No.

Q. Now, I'd like to discuss the two theories of

infringement that Dr. Myler gave to the jury earlier this week. Do you recall them?

A. Yes.

Q. Dr. Myler's first theory was that the scaler by itself in the SOC in the TPV TVs is a plurality of video processor sections.

Do you recall that?

A. Yes, I do.

Q. Now, before I get into the -- into his opinions, do you agree with Dr. Myler that the '24 -- that the '243 patent has anything to do with scaling?

A. I agree that it does not have anything to with scaling.

Q. Now, do you agree with Dr. Myler's opinion that the scaler by itself is a plurality of video processor sections?

A. No, I don't agree.

Q. Why not?

A. Because -- because the video processor sections -- well, I'm sorry.

Let -- let me -- let me say it this way: Because the video processing in the TPV TVs does not process according to the number of lines and whether the lines are progressive or interlaced.

Q. How many scalers do each of the -- each of the

TPV TVs have?

A. They have only one.

Q. And do those scale -- does the scaler run on a -- on a computer program?

A. The scalers are controlled by a computer programs, yes.

Q. Is that program embedded in the chip itself?

A. The way that -- the way that these modern SOCs are designed, they have -- at the very lowest level of the chip, they have some hardware, and then actually embedded inside the chip, they have software code, which is called firmware, because it's embedded in the chip and it's fixed.

And so each of the scalers in the different manufacturer's chips is controlled by firmware inside those SOCs.

Q. And is that called firmware because it's fixed and firm?

A. That's right.

Q. Now, Dr. Myler talked about changing some coefficients, and when you do that, you have different programs. Do you agree with that?

A. I don't agree that -- that simply changing a coefficient changes the program. There's not multiple programs just because you do that.

Q. So is it your testimony that there's a single scaler with a single program?

A. That's my testimony.

Q. Is there an illustration that you could do for the jury that might help them understand this a little bit better?

A. Yes, I can.

MR. LANDIS: Your Honor, with your permission, could Dr. Reader step down and use a whiteboard, or I could draw it for him, whichever Your Honor wishes?

THE COURT: What I'd rather you do, Mr. Landis, is move over to the bar and have Dr. Reader come down to the other side.

MR. LANDIS: No problem, Your Honor. I have a separate easel I can put up over there.

THE COURT: If you will, just set it up just next to the statue here, and that way Dr. Reader can just step around the corner.

THE WITNESS: Your Honor, would you like it a little further back so you can see?

THE COURT: Actually, I was anticipating you'd be a little closer, and you'd be leaning over the rail from the other side. I'm trying to keep you close to the jury box -- I mean, close to the witness chair.

MR. LANDIS: I think that's as close as I can get it, Your Honor.

THE COURT: All right. Plaintiffs' counsel are free to move where they can see, if necessary.

Go ahead.

A. So what I'm going to show you as sort of an example of this, I'm going to show you a very simple equation, and I'm going to show you the equation for calculating the area of a rectangle.

So if we start by drawing a rectangle here, then we get the area of the rectangle equals the length times the width, okay? So we have the length of the rectangle here, and we have the width of the rectangle here (drawing).

Now, let's say in my example that I make the length of the rectangle 4 feet, the width of the rectangle 3 feet. So in that case, I'm going to have an area which equals 4 times 3. And I know that the area of a rectangle is 12.

Now, if I do a second example, I can draw a little rectangle that's somewhat smaller, draw it here, and now let me make the length of this rectangle and the width of this rectangle be, say, 3 for the length and 2 for the width.

So to calculate the area of the new rectangle, I just simply say the area equals 3 times 2. And, of course, I get the area of the smaller rectangle.

Now, to do that, I use exactly the same equation. Nothing changed about that. And all I did was to plug the numbers that I wanted into that same equation, and I get my answer.

Now, if I built this into a system, I could design a piece of hardware that -- that would have a multiplier in it that would be capable of calculating length times width. In either case, I would use that same multiplier. I'd just plug in different numbers.

If I was doing this in software, I could write a software program, just one program that would execute the series of instructions to compute length times width, and I could do that.

If I put this inside one of these SOCs, I might have a hardware multiplier in the SOC, and I might have this firmware, this embedded software, that was capable of just plugging in those numbers to the hardware and doing this. But I have one piece of hardware and I have one piece of firmware to do that. So the scaling operations that happen inside these SOCs that we're talking about here in the TPV TVs operate that way. They're one scaler. They have one piece of

firmware that controls it.

We can plug in a different scale factor. If we're going from 480 lines to 1080 lines, we can change the scale factor to the right number for that. And if we're going to 720 lines to 1080 lines, we can plug in the number for that. But I'm going to have one piece of hardware, and I'm going to have one piece of software that does it.

Q. (By Mr. Landis) Thank you, Dr. Reader.

MR. LANDIS: Your Honor, with your permission, I'll take that down.

THE COURT: Yes, please.

Q. (By Mr. Landis) Now, Dr. Reader, based upon what you just explained to the jury, does the scaler in the TPV TVs meet the plurality of video processors element in Claim 1?

A. No because I only have one scaler.

MR. LANDIS: Your Honor, may I move around to the board, please.

THE COURT: You may.

Q. (By Mr. Landis) So, Dr. Reader, would it be fair for me to put X across at least with respect to Dr. Myler's first opinion about the scaler being multiple video processor sections?

A. Yes. That would be correct.

Q. Now, I'd like to discuss with you a second -- alternative theory of infringement that Dr. Myler had.

Do you recall what that was?

A. Yes. Dr. Myler proposed the -- the idea that the scaler in the SOCs in the TPV TVs could be one video processor section, and the de-interlacer in those SOCs could be another video processor section. So by that argument, he claimed that there would be this plurality of video processor sections.

Q. Do you agree with Dr. Myler?

A. No, I don't.

Q. Why not?

A. Because neither the scaler taken alone nor the de-interlacer taken alone can meet the Court's construction of what a video processor section must be.

Q. Now, just to remind the jury --

MR. LANDIS: Mr. Barnes, can we bring up the Court's claim construction on the screen, please?

Q. (By Mr. Landis) Can you remind the jury what the Court's construction of video signal formats is again?

A. Yes. It's shown on the right-hand side, so video signal formats is the number of scan lines and whether the lines are progressive or interlaced.

Q. Why does the scaler not process according to

the Court's definition?

A. Because the scaler is just concerned with the number of scan lines. The scaler has nothing to do with whether the lines are progressive or interlaced. It literally doesn't care. It doesn't process according to whether the lines are progressive or interlaced. So it cannot meet this definition for video signal format.

Q. Now, let's take a little bit closer look at the scaler.

MR. LANDIS: Can you pull up PTX 901, please?

Q. (By Mr. Landis) Do you recognize this document?

A. Yes. This is one of the datasheets that I referred to earlier, one of the documents that I studied. This datasheet is for a MediaTek SOC, the MT 5389.

MR. LANDIS: And could we turn to Page 85, Mr. Barnes?

And if we could highlight the -- or blow out the equation at the bottom, please?

Q. (By Mr. Landis) What is this equation, sir?

A. So this is the equation which is used to calculate the -- the scaling factor to operate the

scaler.

Q. And does interlaced or progressive appear anywhere in this equation?

A. No. This equation is concerned only with the number of lines.

Q. And this is how the scaler -- all the scalers that you've looked at would operate, correct?

A. Right. For any of the -- for any of the different manufacturers' SOCs, this is -- this is basically how they operate.

Q. So in your opinion, under any mode of operation, is the scaler a video processor section, according to Claim 1 of the '243 patent?

A. No, it's not.

Q. Now, we looked at a MediaTek datasheet, but does your opinion hold true for all of the SOCs in the TPV TVs?

A. Yes. I looked at the datasheets for the other SOC manufacturers, and they all operate in the same way.

Q. Let's turn our attention to the de-interlacer.

Is the de-interlacer in the SOCs of TPV TVs a video processor section, as that term is used in Claim 1 of the '243 patent?

A. No, it's not.

Q. And why do you hold that opinion?

A. Again, because it doesn't process according to both the number of lines and whether the -- the lines are interlaced or progressive.

MR. LANDIS: Mr. Barnes, could you bring up the Court's claim construction again, please?

Q. (By Mr. Landis) So if I heard you right, the de-interlacer does not process according to the number of scan lines; is that true?

A. In this case, yes.

Q. And based on your -- your testimony, is Dr. Myler's second theory of infringement correct?

A. No, it's not.

Q. Why not?

A. Because we -- we're required to have two or more video processor sections. And as I said at the beginning, neither the scaler nor the de-interlacer is a -- a video processing section, according to the Court's claim construction, and, therefore, we do not have the plurality of video processor sections required to practice this limitation of Claim 1.

MR. LANDIS: Your Honor, may we move around to the board again, please?

THE COURT: You may.

Q. (By Mr. Landis) Based upon what you just told the jury, would it be fair for me to mark another X

through the plurality of video processor sections element to show that Dr. Reader's -- I mean, Dr. Myler's section theory of infringement is also incorrect?

A. That would be fair.

Q. Now, based upon your testimony, do you have an opinion as to whether or not Claim 4 of the '243 patent is infringed by the TPV products?

A. Yes, I do.

Q. What is your opinion?

A. My opinion is that Claim 4 of the '243 patent is not infringed by the TPV TVs.

Q. So would it be fair for me to mark an X through Claim 4?

A. Yes, it would.

Q. Now, do you have an opinion as to whether Claim 5 -- let me ask that again.

Do you have an opinion as to whether or not the TPV TVs accused of infringement infringe Claim 5 of the '243 patent?

A. Yes, I do.

Q. What is your opinion?

A. It's my opinion that Claim 5 of the 2 -- '243 patent is not infringed by the TPV TVs.

Q. Would it be fair for me to mark an X through that claim as well?

A. Yes, it would.
Q. And just so we're clear, the basis for your opinion is, is that the SOC in the TPV TVs do not have a plurality of video processor sections as required by Claim 1 of the '243 patent; is that correct?
A. That's correct.
MR. LANDIS: Your Honor, I have no further questions.
THE COURT: Cross-examination?

CROSS-EXAMINATION

BY MR. BLACK:

Q. Dr. Reader, you're the first of three legal consultants that we're going to hear from from the Defendants, correct?
A. I'm sorry. I haven't paid attention to that. I don't know that I'm --
Q. Do you know Mr. Wechselberger who will be testifying?
A. I do know him. Yes.
Q. Do you know him from prior cases that you've worked on?
A. Yes, I do.
Q. You've worked on quite a lot of legal cases, haven't you?
A. I've worked on a number of legal cases. Yes.

Q. You sent us a CV. I think it had 10 or 11 pages of legal consulting positions that you have taken on and discharged; is that right?

A. I don't know that it's that much, because as I mentioned at the beginning, I do a fairly broad range of consulting, so not everything on my CV can be called legal consulting.

Q. Well, you've represented over 40 clients in various consulting and testifying matters as an expert in the patent litigation, right?

A. I've represented over more than 40 clients -- not represented. I've worked for over 40 clients in a number of different tasks. Some of them, as I've said, involved business development and marketing work, and some are purely technical work.

Q. Is it fair to say that in the past 8 years that you've been a consulting expert and testifying expert in patent litigation for over 40 clients?

A. I don't know if it's -- I don't think that's literally true. I think my CV talks about the number of cases in which I've been a testifying consultant, and that number is something like 12 or 13.

Q. Were you a session speaker at the 2011 NAB show?

A. Yes, I was.

MR. BLACK: Can we have the ELMO up, please?

Q. (By Mr. Black) Can you read that, sir? This is your summary CV for the show, isn't it?

A. That's -- that's my bio for that show. Yes.

Q. Yeah. And -- and the yellow highlighted portion says: For the past eight years, Dr. Reader has been a consulting expert and testifying expert in patent litigation for over 40 clients; isn't that right?

A. That's what it says.

Q. That is your job, isn't it? Consulting in legal cases, right?

A. No. I -- I do a broad range of consulting. I do what my clients hire me to do.

Q. You've testified 12 or 13 times in patent litigation matters; is that right?

A. I've been -- I've testified at trial three times prior to this, and I have written expert reports in 12 or 13 cases.

Q. And in all those cases, you concluded that the Patent Office got it wrong and that the patents were invalid, correct?

A. That's true, but that doesn't represent the scope of the work that I do. It's not representative of the type of work that I do or the number of cases or the

types of clients that I deal with.

For example, right now I have four clients that I'm helping to assert their patents through licensing or through litigation. And one of the things that I do is get very much involved in patent licensing through patent pools.

In 1993 to 1994, one of the things that I did that was related to the MPEG standard was to be the expert who compiled the first list of essential patents for the MPEG LA pool. And LA means licensing authority.

So I do a lot of work in licensing, and I am the director of a patent pool right now.

And in the last few weeks, I just started working on forming another patent pool to license patents for profit.

Q. Can you remember what my question was?

A. I don't remember which question you -- you want to refer to.

Q. You've given -- you have not provided an opinion to the jury in this case that the '243 patent is invalid. You accept the validity of that patent, don't you, on behalf of TPV?

A. I've not provided an opinion about the validity of this patent in this case.

Q. You're here only to talk about infringement,

right?

A. Today, what I have talked about are matters of non-infringement.

Q. And it's your word against Professor Myler's, right?

A. No. It's my opinion, as an expert, based upon the analysis of the patent, its prosecution history, and all of the technical documentations for the SOCs in the TVs.

Q. Now, in reaching your opinions, you did not do any testing, correct?

A. I didn't test the TVs in this case.

MR. BLACK: Could you put up Slide 73 from Dr. Myler's slides?

Q. (By Mr. Black) You heard Dr. Myler's testimony that he confirmed his opinions by setting up a testing protocol and working with Mr. Lamm, who did actual tests of actual products in this case, correct?

A. Correct.

Q. Are you aware, sir, because you've been sitting in the courtroom, that Hitachi accuses TPV of infringement with respect to more than 11 million televisions, correct?

A. If you say so, yes.

Q. You did not test a single one of those units,

did you?

A. As I said in my discussion earlier, there is actually in this case a focus on the technology that's embedded inside the SOCs that are in those televisions, so the behavior of those 11 million televisions really comes down to just this handful of designs from the different SOC manufacturers. That's all.

Q. But you didn't do anything to test the behavior of the televisions, right?

A. Not for this case, no.

Q. You mentioned that Dr. Myler had two -- excuse me -- Professor Myler. He's entitled to the title I think. Don't you?

A. If you wish -- I -- I -- I'm an adjunct professor at a university myself, but...

Q. That's great.

Now, Professor Myler testified to two modes of infringement. You kind of reversed them there. One of them has to do with the -- what's inside the scaler, which is actually quite a complex situation, isn't it?

A. I'm sorry?

Q. There's a lot of stuff going on inside the scaler, more than drawing boxes of 4 by 3 and 3 by 2; isn't that right?

A. No. Scalers are -- scalers are actually

pretty -- pretty simple devices. I mean, a scaler just needs to simply do some mathematical operations, very simple operations that just simply multiply and add operations on the lines that -- that are coming through the scaler.

I wouldn't -- I wouldn't say it's complex, no. I built the system that did this in 1984.

MR. BLACK: Can I go to the --

THE COURT: You may.

Q. (By Mr. Black) Scalers are simple. You've got a 480 signal coming in, and you have to have a 1080 signal coming out, right?

A. Correct.

Q. You've got 480 lines, right?

A. Correct.

Q. You've got 1,080 lines that that screen needs, right?

A. Yes.

Q. You've got to create 600 new lines of picture information, right?

A. Right.

Q. You have to create more picture information than came in; you have to create more lines than came into the system, right? Isn't that right?

A. That's right.

Q. That's simple, you say?

A. Yes, it is.

Q. A 480 picture has how many pixels going in this direction?

A. I'm sorry. In the horizontal direction?

Q. Yes.

A. It has 704.

Q. 704.

And how many in a 1080 picture?

A. 1920.

Q. 1920.

And my math says that that means that you have to create for each line 1196 new pixels, right?

A. Oh, yes, but don't forget, in this case, you know, we really should be just talking about the number of lines because that's what the -- that's what the construction is all about. It's not really talking about the number of pixels on along the line.

Q. Well, we're just addressing your statement to the jury that it's all very simple. If you have 704 pixels, red, green, blue, whatever colors they are and whatever intensity, and you have to create another 1116 -- or what is it -- 1216 pixels. It's a fairly complex operation, isn't it?

A. No, it's not. No. As -- as I said to you

before --

Q. Thank you. Thank you, Dr. Reader.

Now, a major point of distinction between you and Professor Myler is whether there are two video processor sections in the accused televisions, correct?

A. He has -- he advanced the idea that there are multiple video processor sections.

Q. Right.

A. And I disagree.

Q. And that's a crucial point of difference between the two of you, right?

A. That's one of the key differences, yes.

MR. BLACK: Could you put up Slide 61 from Professor Myler's presentation, please?

There we go.

Q. (By Mr. Black) Okay. Is it your opinion that the scalers in the accused televisions constitute a video processor section or not?

A. No. The scaler is not a video processing section.

Q. And the construction for this case of video processor section is ordinary meaning to an engineer, correct?

A. One of ordinary skill in the art.

Q. Right. Ordinary meaning.

So we had a slide here. Do you remember this one?

A. Yes, I do.

Q. And you agree that 480p is a different video format from 1080p, right?

A. 480p is an example of one of the formats that the ATSC has -- has defined and broadcasts use, and 1080p is another format.

Q. So the answer is yes.

A. That's correct.

Q. And 720p and 480p and 1080p are all different video formats, right?

A. That's right.

Q. So what happens in a TV that receives a 720p signal but wants to display a 1080p signal, that's what we see here, right?

A. We're seeing that scaled up to 1080p, yes.

Q. And the operations that are occurring within the scaler are, in a very simplified version, what we were discussing over here at the easel, right?

A. They are, but, remember, this is not -- this is not performing the processing according to the claim's construction -- Court's construction.

Q. Ordinary meaning, sir. Is this receiving video?

A. The scaler is receiving video.

Q. Is it sending video to the panel?

A. It's sending video to the panel.

Q. Is it doing processing?

A. It's doing processing, but it's not processing that's required by the third limitation of Claim 1 of the '243 patent. That's the point.

Q. That's your opinion.

A. That's my opinion.

Q. Thank you.

MR. BLACK: No further questions.

THE COURT: Redirect?

MR. LANDIS: Just one brief question, Your Honor. Well, I hope one brief question.

THE COURT: I can count to one.

MR. LANDIS: That's why I wanted to clarify quickly.

REDIRECT EXAMINATION

BY MR. LANDIS:

Q. Mr. Black just asked you a lot about your work history. Has anybody at Mr. Black's firm ever hired you to testify in a case?

A. Yes, they have.

Q. Is he in the courtroom?

A. He may be. I don't see him at the moment, Mr.

Plies.

Q. I know Mr. Plies was at the table at one time. Oh, he's back there. I see him.

Have you worked with Mr. Plies before?

A. Yes, I did.

Q. What did he hire you to do?

A. He hired me to assist him in the defense of a case. He hired me to assist him regarding the invalidity of a suite of patents that were being asserted.

Q. Thank you.

MR. LANDIS: No further questions, Your Honor.

THE COURT: Additional cross?

MR. BLACK: No, Your Honor.

THE COURT: All right. You may step down, Dr. Reader.

Counsel approach the bench, please.

(Bench conference.)

THE COURT: Who's next and how long do you expect him to take?

MR. DACUS: A long time.

THE COURT: We'll take a break now, okay?

(Bench conference concluded.)

THE COURT: Ladies and Gentlemen, it's

expected that the next witness may be of some length, so rather than trying to break during the middle of the time, we're going to take a morning recess at this time.

I'll give you 10 or so minutes. Please stretch your legs, get a drink of water, but don't discuss the case with yourselves or anyone else.

If you will just leave your jury notebooks there in your chairs, and we'll see you back here in a few minutes. You're excused at this time.

COURT SECURITY OFFICER: All rise.

(Jury out.)

THE COURT: All right. We stand in recess.

(Recess.)

(Jury out.)

COURT SECURITY OFFICER: All rise.

THE COURT: Be seated, please.

MR. BLACK: Your Honor, may we address one matter before we bring in the jury?

THE COURT: What is that, Mr. Black?

MR. BLACK: I just want to know -- for the record, Mr. Wechselberger is the -- with respect to the DigiCipher reference, we don't believe, based on Mr. Lery's testimony, that they've laid a predicate to go forward with a validity case on that reference.

THE COURT: All right. I assume this is for purpose of preserving your record.

MR. BLACK: Yes, or if you grant it, we'd be happy, too, Your Honor.

THE COURT: All right. My intention is to discuss that during the informal charge conference.

See, once all the evidence is in, if there's enough to give it to the jury or not.

MR. BLACK: Understood.

THE COURT: But for now, he'll be permitted to testify.

All right. If there's not anything further, let's bring in the jury, please, Mr. Shadden.

COURT SECURITY OFFICER: All rise for the jury.

(Jury in.)

THE COURT: Be seated, please.

Defendants may call their next witness.

MR. BERLINER: Defendants call Anthony Wechselberger.

THE COURT: Come forward.

This witness has been sworn, Mr. Berliner?

MR. BERLINER: Yes, sir.

THE COURT: If you'll come along and have

a seat, please, sir.

You may proceed.

MR. BERLINER: Thank you, Your Honor.

ANTHONY WECHSELBERGER, DEFENDANT'S WITNESS, SWORN

DIRECT EXAMINATION

BY MR. BERLINER:

Q. Good morning, Mr. Wechselberger.

A. Good morning.

Q. Would you please identify yourself for the record.

A. My name is Anthony Wechselberger.

Q. What do you do for a living?

A. I'm the president of a consulting company, Entropy Management Solutions.

Q. And how long have you worked as a consultant?

A. I started Entropy about 13 years ago.

Q. And what does Entropy do?

A. I provide a number of engineering consulting services. I'm basically a systems engineer. Entropy provides services for -- for almost any kind of a network that might distribute content, such as a cable TV network, a broadcast television network, satellite networks.

First, we have the Internet today, and there's also kind of distribution channels for content over the

Internet. So I'm a communications engineer, my background, anything that moves content from one point to another is the things I do.

Q. And where is Entropy located?

A. I'm in a rural area just north of San Diego in Southern California.

Q. Could you briefly describe for us one of the projects you've handled for your work at Entropy?

A. Well, in terms of -- I mentioned content. Probably the -- first of all, I have a number of different clients, so a lot of names that folks would recognize. Some of those client names have been Verizon, AT&T, Amazon, Apple Computer, Comcast, Cable Network, Cox Cable Network.

So in my corporate background, I've worked with these entities, and I continue to work with them in my consulting field. But probably the most interesting thing I've done that -- as a consultant, for the past 10 years, I've been under contract with six major Hollywood studios helping to push forward a project that they started approximately in 1991 called digital cinema.

And digital cinema, the objective is to replace 35-millimeter film in movie theaters. They're expensive to produce and distribute and bring back after the showing. So digital cinema produces digital files,

which are the result of digital -- digital production, post-production, digital distribution.

And the last leg is now being implemented in digital projection. And so my role with the studios is chief systems architect for the security of these digital files so they can't be stolen. I represent them at the Society of Motion Picture and Television Engineers, which is an industry consortium, that develops standards for the motion picture industry and the television industry.

Q. Where did you work prior to the time that you were at Entropy?

A. Throughout the decade of the 1980s, I was working in San Diego at a company called Oak Communications. At Oak, we designed, installed, serviced, and otherwise supported what used to be called broadband network equipment. And this is equipment for distributing television programs over cable networks or over-the-air broadcasting networks, satellite networks. And our equipment resided at the broadcast location by a satellite uplink or a cable head-end. We also built the consumer products that went in your home, the set-top box that everybody hates, but in those days, we produced scrambling systems, and these were analog.

In the 1990s, the evolution towards digital

television took place, and Oak Communications had been sold. I stayed with the company as -- as an executive, and we turned our attention to all digital product solutions. And so throughout the entire decade of the 1990s, we designed and produced equipment, similar equipment designed for digital distribution.

And I was with a second company that was called TV/COM International. I held various titles there, but most of the period, I was the Executive Vice President and Chief Technical Officer.

Q. So how has your work experience prepared you to testify in this case?

A. Well, for throughout -- certainly, through the decade of the '90s with the arrival of the digital television transition and subsequent to then as an engineer, that's 23-plus years now, my work has evolved around the digital movement of content.

And this case is all about digital audio, digital video as content and transmission and reception environment. And so my background academically is a communications engineer. My professional background in content distribution and my experience with standards organizations has prepared me to provide opinions.

Q. You just mentioned the word standards. Can you tell us what you meant by standards?

A. Sure. Standards are a recipe, if you will, that codifies in writing -- that answers questions of how -- how do I or how to; how to generate a broadcast signal. In this case, how to compress information, how to add information, how to provide an end-to-end system. End-to-end means the sending end and transmission end and the receiving. There are a number of supply chains that feed into a given industry that people rely upon.

In this case, we've heard a lot about digital television. You have broadcasters; you have transmission equipment suppliers; you have consumer product manufacturers that make TVs. And the common denominator that people use are the standards that everybody designs to.

And when you do that effectively, you produce compliance, and these various segments interoperate together. And so the standards is the recipe, the how-to that allows this to happen.

Q. Do you have any personal experience in the development of standards for digital television?

A. Very much so. At TV/COM, which was formed -- well, the company existed in 1990 with the sale of the old Oak group. But the revolution, if you will, to -- to reorient the industry toward digital happened in 1990. And we decided that we needed to become a part of

that.

And in 1991, I joined and began to attend the MPEG committees. We've heard about the MPEG committees from earlier testimony. There were actually three subcommittees. I personally attended those meetings about three or four times a year. Several hundred engineers would come together, and for five intensive days, we worked to develop the rough drafts, and then the -- and then finally, more mature drafts of the actual standards.

And we -- the joke used to be join MPEG and see the world. We'd meet in New York or Italy or Rome. And so I was part of this effort through the MPEG committees.

In parallel with the MPEG committees, there were other committees that existed, because they would take the fruits of MPEG, which were just basically the rudimentary foundation of digital television standards, and build upon them to actually finish off the rest of the standards that were necessary to implement a real system.

For example, the ATSC standard-setting body in the U.S. took some -- most of what MPEG provided and then capped it off by adding additional standards for modulation and metadata and other things that went along

with that signal. So you had a fully baked, ready-to-go -- fully ready-to-go standard. So I was part of MPEG, a contributing member.

There was another group that developed to start standards for Europe called the Digital Video Broadcast Group. I was a member of that. At TV/COM, I was Chief Technical Officer. TV/COM had joined the ATSC group as a voting member. It was my job then to follow the rough drafts of standards specifications that came out of ATSC and vote on them.

Q. Have you published any papers relating to -- to this field?

A. I, throughout my career, have participated in a number of industry panels where I've presented papers orally, and I've also published papers. One in particular I think we have a slide of.

This was an article that I wrote in 1993. I first presented this paper at the National Cable Television Association show in Las Vegas. The NCTA is a trade show mostly aimed at the cable industry. That same paper was subsequently -- went to publication in a magazine called Communications Technology.

And there are a lot of different aspects of digital television systems, and this particular paper was about promoting a standardized way to provide

security solutions so that the information that goes over a digital network could be secured or scrambled, if you will, for like TV applications.

So this was a particular area where Oak Communications was -- I'm sorry -- TV/COM International was heavily involved when I was there, so I was promoting ideas for standardization on encryption. I was also promoting, of course, my company.

Q. What is your technical background?

A. I have a bachelor of -- bachelor of science degree in electrical engineering from the University of Arizona in Tucson, 1974.

I have a master's of science in electrical engineering from San Diego State University. I received that in 1979.

And I also am a graduate of the executive program for scientists and engineers from the University of San Diego -- University of California at San Diego. That was 1984.

Q. Do you have any of your own patents?

A. Two -- two issued patents have my name on them.

Q. And how do your patents relate to the technology at issue in this case?

A. Both of these patents are related to

information that provides encoding and decoding information for broadcast television pictures, either in analog and/or digital format.

Q. So what do you enjoy doing when you're not consulting?

A. Well, I work out of a home office, so it's not unusual for me to get up, put in a full day's work, end up in front of the news without ever walking outside. So when it comes to relaxation, it's anything outdoors. I have a boat in the summertime, and we head for the Colorado River and boating activities around there. We also do a lot of hiking and backpacking throughout the California area. My fiance and I are both scuba divers, so we do that when we get a chance. International travel. I also have a bunch of buds that are San Diego City firefighters, and if it wasn't for this trial, I'd be joining them with Texas Motor Speedway this weekend for NASCAR racing. So I like to do that too.

Q. Have you ever testified in court as an expert witness?

A. Yes, I have, six times.

Q. And how many of those times involved questions of patent infringement?

A. Three of those cases have involved patent infringement.

Q. And what was the general subject matter of your previous patent case testimony?

A. All three of those cases related to digital television technology.

Q. Have you served previously as an expert witness for TPV in other cases?

A. I have on two occasions.

Q. Why do you think TPV keeps hiring you?

A. There's a lot of learning curve material to go through when you take on a case, especially things this complicated. So I've been through the drill with them before. I understand their technology. I understand their products. And so it just made sense for economies and to save time.

Q. And have you always served as an expert on behalf of Defendants in your previous case testimony?

A. Not at all. I have provided trial testimony on one occasion where I was assisting a patent owner in asserting their patent. I'm also -- I've got a similar case now, ongoing right now, a different case, where I'm in the middle of writing an expert report for a client who is also going to be -- who has asserted their patent.

Q. So what has the Defendant asked you to do in this case?

A. The Defendant TPV has asked me to provide opinions as to whether their television infringed any of the asserted patent claims, and the other thing they've asked me to do was to study the asserted patents in light of the prior art and provide opinion as to whether those claims are valid.

Q. And are the -- the Hitachi patents that you studied known as at '310, the '375, and the '497 patents?

A. That's correct. I'm responsible for three of the asserted patents. The '310 -- in this case, the '310 and the '375 share the same disclosure and the same diagrams and the same priority date.

Q. And -- and could you briefly describe the subject matter of the '310 and the '375 patents?

A. Sure. These two patents relate to video recording technology. They disclose a playback device and a video-recording device for digital information.

Q. And how about the -- the '497 patent?

A. The '497 patent is about a configure -- about how to build and use a configurable television; that is, a television that is able to receive digital broadcast programming and also receive a supplemental control information channel that configures that TV as to how to process the signals it receives.

Q. Do you have an opinion as to what type of person would qualify as one of ordinary skill in the art with respect to the three Hitachi patents that you studied?

A. Yes. My opinion of one of ordinary skill is that the individual should have at least a bachelor of science degree in electrical engineering or computer engineering or computer science, and three to five years of industry experience in the area of digital television and the associated systems and equipment that go with digital television.

Q. Would you consider yourself to be a person of at least ordinary skill in the art?

A. I would consider -- consider myself to be one of extraordinary skill in the art.

Q. Why is that?

A. Because I've been working within television transmission and receiving systems and the associated equipment for over 30 -- over 30 years. And I've been involved with digital television transmission and reception equipment since its initial beginning as it was directed toward the broadcast industry back from the early '90s.

Q. And do you have opinions as to whether the three Hitachi patents that you've studied are valid and

infringed?

A. It's my opinion that the three asserted patents are invalid in light of the prior art. I'm sorry. That -- that the TPV televisions do not infringe any of the asserted claims.

And with respect to validity, it's my opinion that two out of the three patents are invalid in light of the prior art.

Q. And can you describe for me the information that you relied upon in reaching your opinions?

A. Sure. Of course, many hours of studying the -- the patents themselves and the drawings and the claims, the patent prosecution histories, which provide the dialogue back and forth between the patentee and the Patent Office.

I've studied lots of prior art in my research on that to compare it against the asserted claims. I studied the various -- you've heard the term SOC, system-on-a-chip. I studied the chip components that comprise the televisions themselves. Of course, my background in digital television came into play, especially when I turned to study the digital television standards, particularly the ATSC standard, which is of great importance in this matter.

MR. BERLINER: Mr. Lodge, could you show

JTX 2 for me, please?

Q. (By Mr. Berliner) Mr. Wechselberger, can you tell me what this document is?

A. Yes. This is -- blow it up a little.

This is a document which shows various TV brands and models, and that's on the left column. And in the middle column, it shows the manufacturer of the SOC that's inside that television.

And so in this first column, I see the name Broadcom, for example, as the SOC manufacturer. So it's a list of, I'm assuming, all the accused products which identifies the particular SOC that's inside the TV.

MR. BERLINER: Thank you. You can take that down.

Q. (By Mr. Berliner) Now, Mr. Wechselberger, are you being compensated for your work on this case?

A. Yes, I am.

Q. What is your rate of compensation?

A. $300 an hour.

Q. How much time have you spent in total to prepare for your time today?

A. I -- about 500 hours. I don't know exactly, but I started working on this case on and off more -- almost -- in 2010, so it's been a couple of years.

Q. Why did you spend so much time?

A. Well, you can think about the list of materials I review that I just went over and recognize a lot of documents. I too, like I heard the experts on the other side, have looked at thousands of pages of material, but the -- the main thing that dictates how much time a person like myself spends on a case is how long and difficult is it to get through all the information you need to understand before making opinions.

I take my work seriously. And it's important to be able to not only provide opinions but be able to tell you why I have those opinions. And it takes what it takes.

Q. Does your compensation depend in any way on the outcome of this case?

A. No, it does not.

Q. So let -- let me ask you a little bit about the ATSC. We've heard a lot about the ATSC in this trial so far.

Do you consider the three Hitachi patents that you've studied to be essential to the ATSC standard?

A. No, I don't.

Q. Why not?

A. The ATSC standard took years of development effort on -- in the first place, in calendar times, it

took years. It took the efforts of literally hundreds of engineers from all over the world. We heard this morning that the ATSC standard itself incorporates MPEG 2 standards. I was a part of that MPEG 2 standard process, so when I say it took a lot of effort on the part of hundreds of engineers, I know that because I was one of them.

For years, I went to the MPEG 2 meetings. I followed the development of the standards bodies, sweated the details. And in my opinion, the teachings of these Hitachi patents provide no solutions that were a part of the particular challenges that we were trying to solve at that time.

Q. Now, you mentioned a few technical terms in your answers so far, and I'd like to take a couple minutes just to explore those.

MR. BERLINER: Could you bring up DD 103?

Q. (By Mr. Berliner) I think one of the terms you mentioned was analog and digital. And can you explain that for us?

A. Sure. And, of course, these are characterizations. The curve on the top and the analog signal as it might have looked for analog television broadcasting, which we've used in this country since the'40s right up until a few years ago.

Analog is usually described as a continuously varying smooth signal. If I'm not too nervous, my voice is producing an analog signal, smoothly -- smoothly delivered, contrasting to digital, which is based on the language of computers, 1s and 0s, sometimes called binary bits.

And so the representation on the bottom is what that kind of a signal looks like as it's generated and produced from, for example, a digital television broadcasting station.

Now, these aren't 1s and 0s, but it's what the 1s and 0s get turned into as a multiplexed programming that is sent from a receiver -- transmitter to a receiver.

So it's very discontinuous as you can see, very jagged. And while that looks like a mess to our eyes, through the beauty of television reception and digital signal processing, that's turned that into crystal clear, high-definition pictures.

Q. And you just used another complicated technical term. You said multiplexed. Could you tell us what that means?

A. Sure. You've -- I was in the Court this morning, and -- and other occasions where people have made the point that digital television technology

enables multiple programs to be sent over a single broadcast channel. And this is one of the really attractive characteristics of digital television technology.

And the way that happens is through a process of combining the bits from the programs together. We saw the train this morning from the boxcars, and that's an example -- a pictorial example of multiplexing.

So it's the process of combining together and packaging up, in this case, multiple channels of television programming.

Q. Could you explain to the jury how the development of digital television broadcasting came about.

A. Sure. I have a timeline for that called a digital television timeline. And the timeline -- the timeline goes across -- yeah, there it is -- goes across the bottom from 1980 to roughly 2000.

And I've got a number of technology development areas that I'll quickly talk about. And the story, actually, in terms of digital television technology, can be traced -- could be traced back a long way, but in concrete terms, at least to the early 1980s, with digital teleconferencing systems.

Now, these were audio/visual communications,

connections between, for example, conference rooms from San Francisco and Los Angeles that businesses could use and have realtime interactions or meetings together.

This was not digital broadcasting, but it was digital television. Digital audio, digital video, compressed digital audio/video with parity and so on. So it was a full communications connection two-way.

Another important development was called JPEG. These guys were focused on compression for photographs, and that technology exists now in any digital camera you have.

And the important output from JPEG was image compression technology, the technique called discrete cosine transform, was largely developed and worked for still images and was later applied to moving pictures.

In fact, it was applied by the MPEG 1 committee. By this timeline, MPEG 1 was a lower performance, all-digital, all-audio technology for recording onto a compact disk, and very early, DVD types of disks. But it was applied to transmission systems as well.

Here's the MPEG 2 Committee that I mentioned, and Dr. Reader mentioned before me, and they were working indeed on three separate standards, video compression standard and audio compression standard and

this transport stream, which provided a beautiful solution for multiplexing these streams together.

I also mentioned the DVD developments that were aimed at broadcasting solutions for Europe. And then on the bottom line is this very important line that we'll focus on.

ACATS was the advisory committee on advanced TV services. This was the commission that was generated by the FCC whereby the various companies were promoting analog solutions as you heard this morning.

And the key pivotal point on No. 1 shown there is when the General Instrument Company showed up in the middle of 1990 and demonstrated a true high-definition, all-digital broadcasting solution for over the air. That changed the direction of things.

The ACATS members, by the end of the year, had all turned their attention into promoting digital solutions, even though they were still competing against each other.

The second item shown as No. 2 is where the FCC, recognizing, by the way, that MPEG 2 was going to be successful. That's a little farther down the MPEG 2 timeline there in the middle, 1992, 1993. MPEG 2 was a total global effort, international bodies coming together, and the effort was going to produce an open

standard that everybody would embrace.

And so the FCC turned to the ACATS members, who, remember, are still competing, and said, look, guys open standards are the future, and we think the U.S. broadcast standard ought to be not propriety -- proprietary but should be open. Please get together and see what you can do with the best of the best.

So as you heard before, they finally did align and codify the best of the best. And what came out of that was the ATSC standard shown by the triangle right there, the Advanced Telecommunications (sic) Systems Committee standard.

The first published for draft comment in 1995, I remember when that came out. I was a voting member of that group from -- from TV/COM. And it was approved and later adopted by the FCC as the broadcast standard for the United States.

Q. Now, you mentioned that the group of companies came together. And -- and did they have a name?

A. Oh, well, there were seven companies that were part of what became known as the Grand Alliance, and I guess the name came from World War II. But they were companies like General Instrument, AT&T, North American Philips Corp, Massachusetts Institute of Technology, David Sarnoff Research Labs -- I'm sure I'll forget one

or two.

But they were the Grand Alliance, and they were the ones who capped off what they got from MPEG and what they each contributed as -- from their corporate intellectual property, which became embodied in the ATSC specification.

Q. Okay. Was Hitachi part of the Grand Alliance?

A. No, they were not.

Q. So did -- did -- you mentioned -- you mentioned MPEG 2, and how did the MPEG 2 standards relate to ATSC?

A. As -- as the timeline shows, there were three initial standards that MPEG 2 worked on: Video compression, audio compression, and the systems layer, the transport standard.

ATSC adopt that video compression standard because as -- by that time, in 1993, it had -- through testing and development and mostly global support -- support, it had been shown this was going to be what most of the world was going to embrace as a video compression solution. So they brought that in.

The systems standard, which is the multiplexing technique, was also brought in. Through the elegance of that standard -- which has been used in a lot of different applications, by the way.

That's probably the neatest thing that came out of MPEG because it so wonderfully allows you to develop not just audio and video but any kind of data -- computer data, programs, you name it -- can be packetized and put in these boxcars like you saw and made part of the broadcast standard in addition to TV.

So the answer to your question is, the value of those standards was recognized, not only by the FCC but the member companies. And they brought it in and made it part of the standard.

So if anything is the backbone of the ATSC standard, it's not these three Hitachi patents. It's MPEG.

Q. Did Hitachi play any role in the development or adoption of the ATSC Standard?

A. Not to my knowledge.

Q. Now, Mr. Wechselberger, you've given us a description of the history of the ATSC Standard, and could you briefly describe now for the jury how digital television signals are transmitted according to the ATSC standard.

A. Sure. I have a series of slides. I'll start simple, and we'll work our way up. Not too complex, hopefully.

But at a high level, an end-to-end system --

I've used that term a couple of times -- it simply means a source, a path, and a reception to a transmit antenna. The path is over the air, and the receiver, of course, is in the home.

So there's a number of processing steps that must take place at the transmission site and the reception site. And what you -- without even paying attention to what they are, you can notice a certain amount of symmetry here.

Audio and video is a process. It's combined together. It's prepared for transmission. It's transmitted by a thing called modulation.

The opposite order happens at the receiver, demodulation. The signal is cleaned up after transmission, the streams are separated, and then the video and audio information is separately processed.

Q. So let's -- let's take a look at the transmission side in a little bit more detail. And would you describe that for us.

A. Sure. Over here on the left, the video information in an analog form and audio typically will come in, and the compression -- sometimes the words are used interchangeably, but encoding in our -- in this case, you can think of encoding as including compression.

So it's encoding and compression. What comes in is analog; what comes out are bits.

Now, these bits have been compressed. I saw the model with the balloons being squashed and blown up. That's where this happens, in this box. Bits come out, not balloons, obviously.

Same for audio. So you've got two separate streams. The service multiplex and transport, combines them. Out come those packets, the boxcars from the train analogy.

Channel coding is a real important part of preparing to transmit -- preparing the signal for transmission. I'll talk more about that in a minute. And the modulation part is the engine that takes this prepared information and injects it into the air through the antenna.

Q. And then what happens at the other side, at the reception side?

A. There's a picture of that. And as I indicated, we'll -- we'll march through the process steps in reverse.

The demodulator is the engine that takes the information off the air and turns it back into information that can be processed digitally.

Channel decoding is where the parity error

correction functions happen. We'll talk again more.

Transport demultiplexing separates the information so that the audio decompressor and the video decompressor can do their job of regenerating or reconstituting, as it's sometimes called, that information that ultimately ends up coming out through the speaker and showing up on the picture tube.

Oh, I guess we don't have tubes anymore. Flat screen displays.

Q. So why is the ATSC standard so complicated?

A. Well, that's a segue into this error correction issue that I just mentioned. It turns out that the over-the-air broadcasting channel, these communications that we talked about, distribution channels, that channel is a really tough one. It's a difficult transmission environment.

Lightning provides -- generates what's called ingress interference. Car ignition noise can cause problems. The signal bounces off buildings, mountains, moving things like airplanes.

And as consumers, we've seen these impairments before ourselves. In the analog days, we played with the rabbit ears to get the best picture. You could sometimes see sparklies. That could be ignition noise. A lot of times you saw multiple edges, like multiple

versions of the edge of a building or a person, and that's multipath, and that's reflections off buildings and so forth.

And so that might be annoying to us in the analog days when we were still watching the movie, but it absolutely destroys a digital signal. The digital signal will not get through there.

Q. So how does the ATSC solve that problem?

A. The designers of the ATSC recognize -- I mean, we knew all about multipath and ingress and interference and so forth. Those characteristics were well-known. What wasn't really well-known when the design efforts began for digital television was how to actually build robust protection against this what we call channel impairments.

And through a process of testing and a lot of heavy-duty analysis and math, it was decided that two kinds of forward error -- what's called forward error correction were going to be needed.

One's called Reed-Solomon, and one is called trellis coding. And these provide redundancy to the transmitted signal to -- to impart on it the robustness that's necessary so that it survives that path out to the television set.

Q. So could you explain what you mean by

redundancy?

A. It's actually a pretty simple concept. If we're trying to -- say we were trying to communicate in a very noisy room with a lot of background chatter or what-have-you.

You're sitting across the table with somebody, they didn't get the message, you repeat yourself, or you repeat the most important thing you're trying to say, that's redundancy.

You're adding something extra to the basic information, the basic message. And by adding redundancy, you can then put the signal back or recover from channel impairments in this case that takes place.

Q. So let me show you two of the ATSC standards.

Can you identify these for me, please?

A. The one on the left is -- is the main ATSC standard. It's called A53, and it provides the how-to, the recipes for most of the main parts of how to generate an ATSC-compliant signal. It tells you how to modulate; that is, how to broadcast a signal; it tells you how to compress a signal; it tells you how to add a forward air correction to the signal.

The one on the right that's been highlighted is A54. This is called a recommended practice.

The one on the left is just the facts, mainly

nothing but the facts. It's -- it doesn't really highlight -- it gives you all the information you need, but the one on the right complements that, because it breathes life into the one on the left. It provides recommended ways of implementing hardware.

And in this case, we'll reference it because it provides a nice diagram of what it calls a prototypical receiver; that is, what a typical television receiver system needs to have.

Q. And these documents are marked as Defendants' Exhibits 34 and DTX 35.

And did you review these two documents in forming your opinions for this case?

A. Yeah. I've been familiar with these documents for many years, but certainly I reviewed them, and I found them useful tools to do my work here.

Q. So let me show you a couple of figures from these documents and maybe you can identify them for us.

A. Sure. The one on the top that says transmission came out of the A53 specification. You remember I said that's the recipe for how to broadcast and generate an ATSC signal. So this shows the transmit location.

The information that's been compressed comes in on the left and goes through a series of important

steps. Each one of these steps changes the signal, does something to it. It adds error correction that I mentioned. You see the trellis encoder -- I'm sorry -- that's the Reed-Solomon and the trellis, and then finally, the modulator and out the antenna.

The counterpart of that diagram that was found and convenient to look at for the receiver is in A54. Once again, off the tuner, you can see the information, and it flows through a number of steps on its way to being constructed into a picture.

So there's -- there's -- there's additional information shown on these diagrams that we don't need to pay attention to. And so I've come up with my own version of these, which deals directly with the issues at -- of interest with respect to the patents. And that's what these are.

Once again, the transmission signal path is on the left. Follow the left-to-right process for transmission, a number of steps that I'll talk about, out to the antenna; and on the receive side, the reverse undoing of what was done at the transmitter.

Q. And do the -- does the diagram on the bottom actually reflect what's in the televisions?

A. Absolutely.

Q. And how do you know this?

A. Well, for two main reasons. One, I know it's mandated by the FCC to be able to detect -- well, the FCC doesn't mandate how to build receivers, but if you generate a signal the way it's done at the transmitter, then by virtue of building an ATSC-compliant receiver, you have to do these processes in the television, or you get no picture. So from a technology standpoint, it has to be this way.

Secondly, I've looked at the SOC chips that are the main component in the televisions themselves and confirmed that they perform these functions.

Q. So let's go through the architecture of a television receiver in a little bit more detail. And can you start with the -- can you start with the demodulator?

A. Sure. And I saw the confusion.

You see the little highlight around the demodulator there, the blue. That is the first stage that the -- that the signal hits when it reaches -- comes out of the television into the television tuner. It goes to the demodulator.

I described that a moment ago as the engine that takes the energy and the information off the radio signal and turns it into usable digital information. In this -- in this case, what comes out of the demodulator

are called trellis-coded symbols.

Q. So moving on to the trellis decoder, could you explain what that is for us, please?

A. Sure. And you see the trellis decoder, the second box -- second signal processing box highlighted in blue. Here's the output from the demodulator, those symbols. That looks like, by the way, that diagram I showed earlier for the modulated digital thing, I was comparing analog to digital. And so this is where that comes into play.

Now, the trellis decoder is the first of two forward error correction processing steps that are mandated by the ATSC standard. It takes the information here and performs two -- in two steps a process that pulls the information out of the symbols, turns it into binary bits. The second take actually applies the forward error correction. So what comes out is corrected data; in this case, trellis code-corrected data.

The second process -- excuse me -- one little thing I should have added. The word trellis-coding is the one we use as it pertains most of the time to ATSC signals. Trellis-coding is one of a family of types of codes that perform error correction. The larger family set it comes from is called convolutional encoding and

decoding.

Q. What do you mean by convolutional encoding and decoding?

A. I have to wave my hands in the air a lot, so it would assist me in answering that with the jury if I could write on a whiteboard or something.

MR. BERLINER: Your Honor, would it be acceptable for me to bring the -- this paper over to there to allow him to demonstrate --

THE COURT: Yes, we'll do it the same way, Mr. Berliner.

MR. BERLINER: Thank you.

THE WITNESS: I have permission to --

THE COURT: Yes, you may.

A. And the reason I want to do this is because these are symmetrical processes, and we're looking at the receiver --

THE COURT: Dr. Wechselberger, you're going to have to speak up, since you don't have a microphone.

THE WITNESS: Yes, sir.

A. It's really helpful in describing the decode function if I can also do it at the same time I can use the encode function because these things work in concert together. So let me very quickly just draw some empty

boxes, and then I will fill the boxes in with the information that helps to respond to the question that I was asked.

So I'm going to label this trellis and probably be pointing back to this one when we get a little farther in the questioning. So I mentioned it was a two-step process. And we see up there that there's these symbols coming in -- I'm sorry. That's the receiver, and we start at the transmitter.

And -- and there's a process called trellis-coding. That's the first of the steps. And you've seen a little bit of it early in this week. I've been in the courtroom, and this business about bits being processed. In this case with respect to the trellis-coding, two binary bits go in and three bits come out.

And there was also a drawing that you were shown earlier in the week from the ATSC spec that had a box on it and some circular signal processing. It's a little hard to understand how that works, so I thought I'd show it in a slightly different way as we often do as engineers.

And inside this first step, there is actually a path that's followed by the bits as they go through this trellis-coder. They don't just go in and come out.

They go chunk, chunk, chunk.

THE COURT: Excuse me. Excuse me just a minute.

Counsel, approach the bench.

MR. PLIES: Yes, Your Honor.

(Bench conference.)

THE COURT: It's fine if he wants to use that board to answer your question, but I'm not going to let him get up there and give a 30-minute lecture.

MR. BERLINER: It should be very short.

THE COURT: You're going to have to examine him. It's an aid to the examination. It's not a platform in which to lecture.

MR. BERLINER: Okay.

(Bench conference concluded.)

MR. BERLINER: Your Honor, could I stand over --

THE COURT: And we do have a hands-free microphone, if you'd like to use it, Mr. Berliner.

MR. BERLINER: I would.

THE COURT: Mr. Shadden, would you hand him that, please.

THE WITNESS: I take it I was hard hearing, so hopefully this helps.

MR. BERLINER: Well, why don't I take

that.

Q. (By Mr. Berliner) You were just beginning to explain the first stage of the trellis encoder; is that correct?

A. That's correct.

Q. And can you show how the data moves through the first stage?

A. Okay. And I was about to explain that it takes a number of steps for the data to go through to be turned from two bits into three, but I also want to step back and say why is it called trellis-coding?

Now we can see. It looks like a trellis, and the bits will come through and follow a different path as they go through this trellis-encoding function. Now, this is all done under the control of a mathematical algorithm that's actually controlling this inside the -- the inside the chips.

But you can see that the -- but what I'll tell you is the path that the information takes is a function of the kind of information that goes in, and the magic sauce that takes place is how these two bits gets turned into three, which adds -- which appends the redundancy, adds the -- it provides the redundancy that's in these three bits. The second -- so that's stage one.

Q. And can you tell us what the second stage is?

A. The second stage is called a bits-to-symbols -- bits-to-symbols mapper. And what this box does is it produces those symbols that you see up there for the transmit location.

Jumping now over to the receiver, which is what's on the board, unsurprisingly, there is another trellis, and this is a trellis decoder. And in front of it is a symbols-to-bits mapper.

Q. So what happens in the symbols-to-bits mapper?

A. Those symbols that you see up there come in, and they must be transformed into bits, because these silicon chips operate on binary information, which we call bits. And the main point of doing this is to impress upon the message here is that in the generation of those three bits from the two, there is a complete transformation through this trellis function that takes place.

These three bits, if you were to look at them in their bit pattern, look nothing like these two bits that go in. That's okay, because even though they've been transformed into a completely different kind of a signal, this trellis decoder, through the mathematics that makes it run, will undo that process at the receiver. And with three bits in will regenerate the -- the two bits that come out. And this performs error

correction at the receiver.

Q. Thank you, Mr. Wechselberger.

MR. BERLINER: Thank you, Your Honor.

Q. (By Mr. Berliner) So after the trellis decoder is the data de-interleaver; is that correct?

A. That's correct. That's the next signal processing stage. Back again at the transmitter -- I wont' get up and draw it, because we can do the rest of these, I think, easily here.

Back at the transmitter, information got interleaved. And so there is a stage in the receiver to undo that. It's called a data de-interleaver.

And the color-coding here is intended to give a little picture of what that might mean. What that does mean is that the interleaving process is kind of a randomizing process, so non -- the non-interleaved information looks in a -- in a more -- in the pattern you see.

Q. And what is after the de-interleaver?

A. After the de-interleaver is the Reed-Solomon decoder. This is the second forward error correction process mandated under the FCC standard.

What comes into the Reed-Solomon decoder is the information that came from the encoder at the transmitter. In this case, it's a combination of two

kinds of information.

On the left, the blue and the red are audio and video information. For example, it's the content information. Appended to the content, literally added to that content information is -- is what's called parity information. The Reed-Solomon encoder at the transmitter is a parity-adder. And this is important, because when we look at the patent, you're going to see a diagram which says parity-adder.

So the Reed-Solomon is a kind of error correction code that uses parity, and it adds parity to the information. You can see it. It's right there. It's those ps. It's the job of the Reed-Solomon decoder to use that redundant information to fix bit errors.

And if we slip to the next slide, we have an example of information that is coming into the Reed-Solomon decoder that has bit errors in it. That bit should be a 0; that bit should be a 1. Something happened during transmission to contaminate the information. And so the algorithm inside the Reed-Solomon decoder is able to find out which bit is wrong and fix it.

And so we have the corrected information coming out of the Reed-Solomon decoder.

Q. So how is trellis error correction coding

different from Reed-Solomon error correction coding?

A. Right. Reed-Solomon is a parity-adder process. You can see the original information, and you can see the parity distinctly being added to it. After the Reed-Solomon does its work, you don't need the parity bits anymore. You've corrected the data.

Trellis is different. Trellis is a -- through that convolutional code processor, the trellis encoding that I drew over there transforms the information into something different. It doesn't have a parity signal. There's no parity addition that takes place. It's not the way it works.

Q. So what comes after the Reed-Solomon decoder?

A. The next box is called a data de-randomizer. Once again, a randomizing function took place at the transmitter. It's undone by the data de-randomizer, and we have a recovered transport stream packet at this location. After all these signal processing functions happen, if everything works right, you've got the boxcar information that we saw earlier. That's what's here, and that's ready to be bit-expanded.

Q. Now, can you explain again what you meant when you said that the error coding and decoding is a two-layer process?

A. Sure. And it has to do with the concept of

the processing steps that are done at the transmitter in a certain order have to be done also at the receiver but in the reverse order.

You have to undo step-by-step what you did at the transmitter. So it's like putting on your shoes and socks. You have to put your socks on first. You have to put your shoes on second. Later on, it has to happen in the reverse order. You have to take your shoes off first, then the socks.

Same is required of the two-layer error correction processing under the ATSC standard. It's called a concatenated code, and they're in that order for a reason. And the receivers have to undo it in just that order.

Q. So would a -- would a digital television work if it didn't have this complex, two-layer coding solution.

A. It absolutely wouldn't work. The designers of the ATSC system learned this during testing, and that's the reason the standard has two layers in there, to make it work. I should say to allow it to work.

Q. Now, I'd like to change gears a little bit and talk about the first two of the three patents that you studied, and that's the '310 and the '375 patents. And these are exhibits, DTX 761 and 762, in your book of

materials.

So could you describe generally for us what these two patents are about?

A. Yes. These are the videotape-recording patents. They involve a playback device which produces digital audio/video information and then a recording device.

Right inside at the beginning of the disclosure of a patent, you'll typically find something called a background of the invention. It sort of steps up and tells you what you're about to learn about. This background says the present invention relates to a system for transmitting a digital video signal and a -- and recording the received video signal.

A little bit further down in the background of the invention, it talk -- it calls attention to a particular characteristic that this patent is directed to, and you'll see the term high-speed recording, and it's making the point that the prior art, the other existing VTRs that are out there, they don't do high-speed recording. And this patent does that.

Q. So you mentioned VTR. Can you tell us what that is?

A. VTR stands for videotape-recorder. It's like any kind of tape-recorder, cassette recorders, compact

disks, what have you that we've used as consumers. This, however, is a digital device.

Q. And can you explain how the high-speed recording takes place in the '310 and '375 patents?

A. We'll take a look at Figure 1, I believe. Yes, there it is.

At the top part of Figure 1 is the playback device. There's the -- the playback head that the information spools off of, and it goes across a transmission path to the receiving device. And there's a number of signal processing boxes here, but then there's the recording head shown at the bottom.

Q. So let's -- let's --

A. That's the transmitter, and the next one highlights the receiver.

Q. So does the '310 patent include compressor or error correction circuits?

A. Sure. And the next slide highlights that compression, and error-coding is indeed part of this patent. These are digital signals as I mentioned, and you can see the bit -- I'm sorry -- the bit compressors here. And there's that parity-adder that I mentioned earlier at the transmitter side and then the counterpart. Things that undo that process at the receiver are shown below.

Q. Now, were you in the courtroom when Mr. Hamilton testified?
A. I was.
Q. And did you hear him talk about Figure 4 of the '310 patent?
A. Yes. Figure 4 is the particular figure in the patent that he used to describe his alleged infringement on the part of the televisions.
Q. So was the use of error correction or compression something that Hitachi had invented?
A. Absolutely not. Those concepts of compression of video and audio information and parity addition are standard communications techniques that have been known about for many, many years.
Q. Now, in your preparation for your opinion, had you reviewed the deposition transcripts of the inventors?
A. Yes, I had.
Q. So I'd like to read to you from the deposition testimony of Mr. Hitoaki Owashi, one of the named investors of the '310 and '375 patents. And then I'll ask you some questions about his testimony.
MR. BERLINER: And if you could, please, show the testimony, starting at Line 13.
Q. (By Mr. Berliner) QUESTION: And was the use

of error correction information on videotape known at the time of your invention?

ANSWER: It was known.

QUESTION: Is that something Hitachi invented?

ANSWER: I don't know accurately who invented that.

QUESTION: Okay. But you did not invent that, right?

ANSWER: That's correct.

Mr. Wechselberger, what is your reaction to this testimony?

A. That's completely consistent with my opinion that Hitachi did not invent error correction.

Q. Now, let me show you another excerpt from the deposition testimony of Mr. Owashi.

MR. BERLINER: And if you could, please go to 116, Line 8.

Q. (By Mr. Berliner) QUESTION: So it was known at the time of your invention to compress digital video information, correct?

ANSWER: There existed various compression technologies.

QUESTION: Which compression technologies are you aware of that existed at the time of your

invention?

ANSWER: At the time, I myself had not researched in detail compression technologies, so I don't think I knew specifically what compression technologies there were.

QUESTION: But am I correct in understanding that at the time of your invention, it was known to compress digital video information?

ANSWER: I think that's correct.

QUESTION: And also at the time of your invention, it was known to compress digital audio information, correct?

ANSWER: I think it's correct to say that technology to compress audio was known at the time.

Now, Mr. Wechselberger, what is your reaction to that testimony?

A. That testimony is also completely consistent with my opinion that Hitachi did not invent bit expansion of compressed digital or audio signals.

Q. And did you hear Mr. Hamilton testify that Figure 4 illustrates a broadcast television receiver?

MR. BERLINER: If you could return to that slide, please.

A. Yes, I heard him testify to that.

Q. (By Mr. Berliner) And do you agree with him?

A. No, I don't.
Q. Why not?
A. Several reasons. First, Figure 4 is shown here in its entirety, and if -- and I've put on the screen here what the specification labels Figure 4. In the spec, when it talks about the diagram -- or the figures, it calls this a recording and reproduction system.

Every figure in this patent has a tape head for recording or playback. There's no suggestion that these processing functions are applicable in the specification. There's no suggestion it's applicable to a television signal or even a hint. And the word television doesn't appear anywhere in the spec.

Q. So if Hitachi didn't invent bit expansion or error detection, then what was new about the '310 and '375 patents?
A. As I indicated, the summary of the invention talked about the existing state of the art in digital VTRs at the time, and the other ones that were out there didn't do high-speed -- basically, high-speed dubbing, recording playback, and that this one could.
Q. So would -- the error correction technology that's described here in the '310 and '375 patents, would that work in broadcast television?

A. Absolutely not.
Q. And why not?
A. All -- a couple things I'll say about -- first, there's very little disclosed about the actual function of the error correction technology in -- in this patent. In fact, there's nothing usable given about it.
There's a box in the diagram that says parity-adder. Parity-adders can be extremely simple. In fact, most of the time, they usually are. So that's all we know is what the patent gives us. And it shows a couple of particular types of approaches to parity addition.
But as I went over with respect to the ATSC system, that requires a lot more than just parity addition, and there's nothing supplied in this patent that -- that provides anything more than simple parity.
Q. Now, Mr. Wechselberger, I'd like now to turn to the claims and talk about the claims.
MR. BERLINER: And -- and, Your Honor, may I approach just to rearrange the -- these devices here?
THE COURT: Yes, you may.
MR. BERLINER: Thank you.
Q. (By Mr. Berliner) I've placed on this board

the two assert -- well, the -- the claims or the claim of the '310 patent that's asserted. I'm showing both Claims 6 and Claims 7 on this board.

So, Mr. Wechselberger, did you hear that -- did you hear Mr. Hamilton testify that Claim 7 is the claim that is asserted to be infringed?

A. That's correct. I heard him say that, and since Claim 7 is a dependent claim and depends from Claim 6, it means that in investigating infringement, one has to look at each and every requirement of all of the Claim 6 in conjunction with the additional requirement in Claim 7.

Q. And that's why I've put both Claims 6 and 7 on this board here and also on the screen. And do you have an opinion as to whether Claim 7 is infringed by the TPV televisions?

A. Yes. Based on my investigation, Claim 7 is not infringed by the TPV televisions.

Q. So let me ask you a few questions about the claim limitations themselves.

Now, this claim, actually Claim 6, includes the limitation: An error correction signal added commonly to both the video signal and the audio signal.

Can you explain how that is shown or described in the patent?

A. Sure. Now, this claim has require -- excuse me.

It's basically about a receiver device, but because it describes the way the transmitted signal is generated, we have to also look at -- from time to time, depending on which claim element we're looking at, we have to look at what happens over at the transmitter to generate that signal.

And this particular claim element is talking about an error correction signal that's been added to the signal that's generated. So we have to go to the transmitter to see what it tells us.

And blown up there is the transmitter location with that parity addition Circuit No. 24 that I pointed out earlier. So we have audio and video compressors feeding their information directly into a parity adder.

So that satisfies the requirement of the first claim element that we're looking at -- in -- that satisfies that in the patent.

Q. Now, did you hear Mr. Hamilton testify that this added commonly limitation is met by trellis encoding?

A. Yes. For the commonly added parity, Mr. Hamilton pointed to the trellis decoding -- trellis encoding/decoding function used in the ATSC standard.

Q. And do you agree with that?
A. I do not agree with that.
Q. And why not?
A. Well, the main reason is -- and we'll take a look now, jumping over to the ATSC standard, again, focusing on the transmit side first, which is where the parity -- where the parity information happens for trellis encoding, there is the trellis encoder.
And as I talked about when I drew on the -- on the easel over there earlier, parity encoding is -- does not generate -- I'm sorry -- trellis encoding does not generate a parity signal. It does not add a parity signal to the signal that's being transmitted.
The claims says parity is added. The name of the game is the claims. That doesn't happen here. No error correction signal is commonly added.
Q. So if -- if we move -- return to the claim, another limitation of the claim reads -- I'm sorry -- another limitation of the claim reads: A first expander which bit-expands the video signal of the digital signal corrected by the error corrector in accordance with the first compression method.
And how is this shown in the -- in the patent?
A. Okay. Now, this claim element is directed to the receiver, and so we've gone now to Figure 4. And

highlighted there is what this patent calls the first bit-expander, which is for video.

And the error correction box is where my -- my laser pointer is pointed right now. And we can see the bit-expander is indeed expand -- oop -- expanding the information that's coming out of the error corrector.

So, again, this is how the patent meets the requirement of this particular claim element.

Q. So how does this differ from the TPV televisions?

A. Well, look at the TPV television, and the trellis decoder is shown here. You see the blue highlight around it. And the bit-expander is way over here.

And so I brought attention to the fact that although the claim says you must bit-expand the signal that -- the output from the error corrector, which in this case is the accused trellis decoder. That doesn't happen.

There's several signal processing blocks that stand between the output of the trellis decoder and the bit-expander. Every one of these signal blocks process that signal.

They're there for a reason. This signal in the middle is not the same as that one that went in;

contrastly this one changes again; this one changes again.

So bottom line is, what's being bit-expanded is not the same signal, and I think I highlighted that.

Q. Could you -- could you identify the blocks that are between the trellis encoder/decoder and bit-expander?

A. Oh, sure.

There is a data de-interleaver block. There is a Reed-Solomon decoder block. There is a data -- a data de-randomizer block. And then the de-multiplexer sits between the bit-expander and the trellis decoder.

Q. And what is the result of those processing elements being interposed between the trellis decoder and the bit-expander?

A. Well, the bottom line is, the signal that's being bit-expanded is not the same signal that is being error corrected.

Q. So what would happen if we were to feed the output of the trellis decoder directly into the bit-expander?

A. If we look at what would be required to force the accused televisions to meet the requirements of the claim, we'd have to connect the output of the decoder, the error corrector, just as the claim said, to the

bit-expander.

And you can see what's happened is, we've bypassed all the signal processing steps. And I've indicated that we must undo at the receiver what happens from the transmitter, and at this point in time, you've just destroyed that processor. This won't work.

Q. Did you hear Mr. -- Mr. Hamilton testifying about this very point in reference to the connection of the trellis decoder directly to the bit-expanders?

A. I was in the courtroom earlier in the week when he was asked about that, yes.

MR. BERLINER: Your Honor, may I approach to change boards?

THE COURT: Yes, you may, Mr. Berliner.

MR. BERLINER: Thank you, Your Honor.

Q. (By Mr. Berliner) Do you recall seeing this board?

A. Yes, I do.

Q. And maybe I'll just set it up here. This is a board that was shown during Mr. Hamilton's cross-examination. And do you recall what he said about it?

A. Well, there's two different questions being answered here, so we have to call attention to the one that's relative here.

If you -- I don't want to shine the laser pointer at that, because it could reflect, but if you could help me point out where the trellis decoder is on this -- on this whiteboard up at the top there, he was asked if that output were made -- forced to go -- that's correct -- that purple line.

Q. You mean through the blue line?

A. Through the blue line to the MPEG 2 decoder --

Q. So --

A. -- which is a bit-expander.

THE COURT: All right. Gentlemen, let's talk one at a time, not talk over each other.

Continue.

MR. BERLINER: Yes, Your Honor.

A. So the purple line connects the trellis directly to the bit-expander, which is the MPEG decoder, and he was asked if that would work, and I think his words were literally, that would work, and that's why that red X is there. It breaks the system.

Q. (By Mr. Berliner) Thank you.

MR. BERLINER: Let me take this down.

Q. (By Mr. Berliner) So the next limitation of Claim 6 reads: A second expander which bit-expands the audio signal of the digital signal corrected by the error corrector in accordance with the second

compression method.

And can you explain how the language of the second expander limitation relates to Figure 4?

A. Sure. This language is -- is the same as what we examined a moment -- or I examined a moment ago with the first bit-expander. And this time, however, the error-corrected signal is coming to the -- excuse me -- the audio expander.

So it's the same claim requirement being addressed in the same way by the Figure 4.

Q. And do the TPV televisions have such a second expander?

A. They don't have an expander that operates like this. They have a second expander, but the signal processing path in the accused televisions is exactly the same as what we saw in the first bit-expander case.

Q. So do the TPV televisions satisfy the added commonly the first expander and the second expander limitations of Claim 6?

A. They do not.

Q. And do we need to go on to consider the additional limitations of Claim 7?

A. No, we don't.

Q. Why not?

A. Because Claim 7 depends from Claim 6. At

least three of the claim elements in Claim 6 are not satisfied by the TPV TVs. And, therefore, Claim 7 cannot satisfy those because it must include all of the requirements of Claim 6.

MR. BERLINER: Your Honor, may I approach the board again?

THE COURT: You may.

Q. (By Mr. Berliner) So would I be able to cross out the error correction signal added commonly limitation from the claim?

A. That's the first one that is not satisfied that I described.

Q. And what was the second one that you described?

A. The second one was the first expander -- a first expander.

Q. And I can cross that out?

A. Yes.

Q. And what was the next limitation that you mentioned?

A. And for the same reason; the second expander is not satisfied.

Q. And did you also say that Claim 7 cannot be met because Claim 6 was not?

A. That is correct.

Q. And then I'll cross that one out.

So do you have an opinion as to infringement of Claim 7 of the '310 patent?

A. For the reasons that -- yes. For the reasons that I've just explained. In that the claim requirements are not satisfied, Claim 7 cannot be infringed.

Q. So now let's move on to the '375 patent. And did you hear Mr. Hamilton testify that Claims 26 and 30 of the '375 patent are asserted to be infringed?

A. Yes, that's what I heard him say.

Q. And are 26 and 30 dependent claims?

A. That's correct. There's two asserted claims from the '375 patent. Both of these are also dependent claims, which means that the dependent claim from which they depend, all the requirements of both claim elements must be satisfied to find infringement.

Q. So let's talk about Claims 25 and 26.

MR. BERLINER: And, Your Honor, may I approach to replace the board?

THE COURT: You may.

Q. (By Mr. Berliner) So on this board, I have placed Claims 25 and 26. So let me start by showing you a side-by-side comparison of Claims 25 and 26, which appear on the right side of this slide, and Claims 6 and

7 of the '310 patent that we just discussed a few moments ago.

Can you tell me how these two claims differ, two sets of claims?

A. Yes. And I've got a highlight that helps to jump right to the answer of that. The claims -- most of the claim element requirements between what we just went through and this new one at 25 and 26 are the same.

What are shown here are the differences. And it -- it -- the differences relate to the information surrounding error correction. The claim we just finished with had error correction information added commonly to both the audio and video as we saw before.

And the requirements this time around are that that information -- parity information meets -- I just -- apparently, when I touched this -- I'm sorry about that. I just discovered that. That's -- thank you.

Parity information is added to the video and then separately added to the audio.

Q. So the key difference between the sets of claims is that the '310 claims have the added commonly language, and the '375 claims have the separately added language. Is that a fair characterization?

A. Yes. That's the only difference.

Q. Okay. And where would we find this separately added language in the patent?

A. Let's take a look, again, at the transmitter in the patent because that's where the parity functions are added to the transmitted signal.

And once again, we are directed to the same three circuit boxes that we saw earlier. In the previous patent, the patent tells us that parity is added commonly, and now the patent is telling us that a parity is being added separately.

And I've looked through this patent spec. There's really no additional detail provided in the written form of the text that explains how it can do both at the same time. But, anyway, this is where we start, with these -- with these circuits.

Q. Now, Claim 25 includes the limitation: An error corrector configured to correct an error of the digital information demodulated by the demodulator based on the error correction information.

And did you hear Mr. Hamilton testify that the error corrector limitation of Claim 25 is met by the Reed-Solomon decoder in the television?

A. Yes, that's correct.

Q. And -- and do you agree with him?

A. No, I don't.

Q. And why not?
A. Once again, we -- I would like to look at the functions of first the receiver in the patent which satisfies this requirement, and then we'll compare those to what happens in the accused televisions.
So Figure 4, again, is the patent receiver. There's the demodulator function, and it is -- the claim asks -- requires that the output of the demodulator go to the error correction block. That's a direct path.
Q. So how are the accused televisions different?
A. If we could look, then, at the signal processing and -- and under the ATSC standard, highlighted is the demodulator function, and over here we see the accused Reed-Solomon function, and once again, we find that there are signal processing blocks between the output and demodulator and the input of the Reed-Solomon decoder. There's -- in particular, there's this trellis decoder and followed by the data de-interleaver.
And so we find two stages of signal processing, each of which changes the signal. So by the time that signal gets to the Reed-Solomon decoder, it is no longer this signal that the claim element requires.
Q. So what would happen if we were to feed the output of the demodulator directly into the Reed-Solomon

decoder the way the patent has described?

A. If we consider forcing an ATSC receiver to follow the requirements of the claim, we would have to come out of the demodulator and blow past the signal processing blocks that it's supposed to use and directly into the Reed-Solomon decoder.

And there's two -- two basic problems here. One is the output of the demodulator isn't bits; it's symbols. These boxes can't process symbols. That's why the trellis decoder has a symbols-to-bits translator in it, to get back to binary data.

The second reason is that by bypassing required ATSC functions, you destroy the ability of the television system to operate, and this configuration, once again, would not work.

MR. BERLINER: And may I approach one more time to replace the board?

THE COURT: You may.

MR. BERLINER: Thank you, Your Honor.

Q. (By Mr. Berliner) And if I return this board that we looked at a moment ago, is this path between the -- between the demodulator and the Reed-Solomon decoder illustrated?

A. Yes. This time the output of the demodulator is shown as bypassing those two stages I pointed to on

the -- on the projector by that green line and the demodulator output is being fed to the Reed-Solomon decoder.

And Mr. Hamilton was asked, with respect to this configuration, what would happen, and his response once again, as shown by the red X, is that on an ATSC receiver, this won't work.

Q. Thank you.

THE COURT: Counsel, approach the bench, please.

(Bench conference.)

THE COURT: How much longer do you have, Mr. Berliner?

MR. BERLINER: Probably still another half hour.

THE COURT: Okay. If you've got a half hour, I'm going to break now, and we'll pick up after lunch.

Do you have any idea what your cross is going to be?

MR. PLIES: I'm thinking probably about 20 to 30 minutes.

THE COURT: Okay. Okay. And after this guy, who's next on your side?

MR. BERLINER: Our damages, Mr. Ugone.

THE COURT: Okay. All right. Well, I'll break for lunch now.

MR. BERLINER: Thank you, Your Honor.

(Bench conference concluded.)

THE COURT: Ladies and Gentlemen, I'm told that there's considerably more examination of this witness to come, so it's less than 10 minutes until noon, so we're going to take this opportunity to break for lunch.

I'd like to get you back about five minutes until 1:00, and we'll start back at 1:00 o'clock so we can stay on schedule.

Don't discuss the case with yourselves or anyone else. Otherwise, enjoy your lunch hour, and we'll see you back ready to go at 1:00 o'clock.

You're excused for lunch.

COURT SECURITY OFFICER: All rise.

(Jury out.)

THE COURT: All right. We stand in recess for lunch.

Let me see lead and local counsel in chambers for just a few minutes.

(Lunch recess.)

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CERTIFICATION

I HEREBY CERTIFY that the foregoing is a true and correct transcript from the stenographic notes of the proceedings in the above-entitled matter to the best of my ability.

/s/_____ _____
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Official Court Reporter
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